AN INTRODUCTION TO

Agricultural Economics

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AN INTRODUCTION TO AGRICULTURAL ECONOMICS

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PREFACE

The study of agricultural economics may be approached from either the agricultural or the economic point of view. The former places the first emphasis upon agriculture as a dynamic industry, the latter upon the economic principles underlying its activity. These points of view supplement each other; both are needed for a broad foundation.

In practice various means of introduction are used for students in the general curriculum in agriculture. Among 44 land-grant institutions nearly equal numbers were using the following approaches in 1949:

1. An introductory course in agricultural economics at the freshman-sophomore level with no required course in principles of economics.
2. An introductory course at the freshman-sophomore level, before a course in principles of economics.
3. An introductory or general course at the sophomore or junior level after a course in principles of economics.
4. No introductory course; students take applied courses in the field after a course in principles of economics.

Still further diversity was indicated by the variations in the introductory courses given.

This text is an outgrowth of an introductory course in agricultural economics which has been taught by the author for a number of years. It is in no sense a substitute for a course in the principles of economics. Its approach is from the agricultural side in an attempt to provide the historical background and a practical understanding of the economic aspects of present-day American agriculture.

The need for such a background has been aptly phrased by Dr. E. G. Nourse. "The great trends of our American agricultural industry can be appreciated only if we go back far enough to see the succession of up and down movements that have unfolded themselves thus far, and if these movements be studied with relation one to another to see what are the underlying causes that have conditioned each successive stage of our evolution." (*American Agriculture and the European Market.*)

Upon this background and as a further development of it the important phases of agricultural economics are developed. Each phase, of course, includes ample material for one or more entire courses. Here each is limited to the equivalent of one week on a semester basis, and further development is left to subsequent courses. Through this brief study of the

economic aspects of agriculture and their interrelationships students may gain some basic understanding of the scope of our agriculture and the significance of its economic problems.

The field is dynamic; economic forces continue to operate and new data appear. The record as given must obviously stop somewhat short of the date of publication. Moreover, some aspects of the field have distinct applications by regions or states. The use of supplementary materials, therefore, will be of value to "carry on" in point of time and to furnish these more localized applications. In several chapters exercises are suggested by which students may become acquainted with specific problems of the area through the application of local data.

The author expresses his appreciation to all those who have given help directly or indirectly with the present work. Abundant use has been made of published materials from many sources; an effort has been made to give full credit to these sources. Credit is due also to the score of graduate assistants, each of whom has contributed to the content of the course. Specific acknowledgment and appreciation are extended to my colleagues in the Department of Agricultural Economics, University of Illinois, who have read parts of the manuscript and have made valuable suggestions for its improvement. These include Professors C. L. Folse, G. L. Jordan, L. J. Norton, F. J. Reiss, and W. N. Thompson, and Doctor E. L. Sauer, Project Supervisor, U.S. Soil Conservation Service. Finally, much credit is due to the author's wife for her untiring encouragement and help.

ROBERT C. ROSS

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Chapter 1. INTRODUCTION

Probably no other country has applied as much wealth and "technical know-how" to the development and improvement of its agriculture as has the United States. Yet at the middle of the twentieth century our agriculture stands at the crossroads, uncertain which way to turn. Important decisions lie ahead; how they are decided will have far-reaching results. They involve how well we will use our agricultural resources, how prosperous farmers will be in the years ahead, how adequate will be the diets of all our people, and how much agriculture is to contribute to the welfare of the country.

On the production side remarkable results have been attained. The application of scientific methods by the agricultural experiment stations and private agencies has provided many ways by which farm production has been increased in volume and reduced in cost. This information has been taught to increasing numbers of students in our agricultural colleges and in the high schools and, through the extension service, to more and more farmers on their farms. While the progress has been cumulative over a long period of years, it has been outstanding during World War II and the postwar years when expanded markets and high prices for farm products were effective stimulants to maximum production. These influences combined to push farm production and farm income beyond anything previously attained. The period of the forties was indeed a golden age for agriculture.

This bright picture which called forth such heroic efforts during the war years has begun to fade. The combined high production has placed a heavy and wasteful drain upon our resources of soil fertility. Costs of farm operation have mounted rapidly and remain at high levels. Meanwhile, prices of farm products which as a group had maintained a position above parity for nearly a decade declined below that level late in 1949. That they had not declined at an even faster rate was because of artificial supports for prices of many products. This downward trend could not be ascribed to a lack of markets, for employment within the United States has held at a high level since the end of the war, with wage scales on a higher basis year by year. Exports, supported by our huge gifts and loans to other

countries, have also moved large quantities of farm products from our shores.

Surpluses, the specter of prewar days, have appeared in even greater quantities and include a much greater range of products than ever before. Because the government is obliged under present laws to buy many farm products to maintain prices, government stocks in early 1950 included several hundred million bushels of corn and wheat, millions of bales of cotton, and millions of pounds of butter, cheese, dried eggs, and dried fruits. In addition farmers had huge amounts of grain under government nonrecourse loans under which the products can be surrendered to liquidate the loans. The problem of surplus potatoes has received greater publicity than other products because they cannot be stored for long periods.

How to dispose of these accumulations and at the same time to maintain an orderly market for current production at an acceptable price is the prize problem. Lower prices obviously mean reduced income to farmers, and many farmers fear the "squeeze" between lower prices for their products and the high costs of operating their farms. Farmers are unwilling to accept a position which lowers their level of living relative to that of other groups. The drastic adjustments following 1920 and 1929 are still remembered.

Basically, except for the unusual requirements of war conditions, we have too much production for the effective demand. Many kinds of measures have been proposed for this dilemma, and a number of measures have been tried. A program to be satisfactory must be acceptable to farmers and to consumers, yet should not place an undue burden upon the public by adding to its tax load. These points of view are contradictory, for all governmental programs that offer substantial aid to farmers also call for large amounts of public funds. High support prices also mean higher prices for food or higher taxes than consumers would otherwise pay. Moreover, an increasingly larger proportion of the consuming population is engaged in nonfarming occupations.

By the end of 1950, the picture had again changed. The participation of the United States in the United Nations' effort in Korea, and the threat of international conflict on a wider scale, had precipitated a partial remobilization within the United States with attendant shifts in the program of agricultural and industrial production. These defense efforts raise the possibilities of severe inflationary effects and governmental controls; in short, they again place the country under a war economy, at least on a limited scale. Such rapid changes, regardless of their direction, create strains in agriculture and render more difficult the adjustment between the supplies of farm products and the demand for them.

This whole complex situation is popularly spoken of as "the agricultural

problem." Obviously it is more than a single problem; for the position of agriculture is of increasing importance because of the interdependence of all parts of our economy as is illustrated in the following paragraphs.

As a producer of food and other raw materials the farmer occupies a strategic role. Because he does not punch a time clock or have his activities directed by others, he has often been described as independent. But is he independent? He is, of course, dependent upon natural forces which he cannot control; the amount and distribution of rainfall, sunshine, and temperature may enhance or limit his production. His production also has biological limits. Once it is under way little can be done to adjust it to changes in price or market conditions. Production cannot be doubled or trebled by putting on more shifts, nor can production lines be closed down to meet new situations. Only partial controls have been devised for insects and diseases which attack his products. Commercial farming has also developed many aspects of economic dependency.

The power units and machinery so necessary to present-day methods, the motor fuels to operate them, the mineral fertilizers that are applied, the chemicals for insect control are all products of industry. The transportation of farm products to market, the conversion of them into the forms desired by consumers, the storing of them until they are wanted are all performed largely by nonfarm groups. Only a small part of the market, which reflects the ability of people to buy these products, arises as a result of the farmers' efforts. Thus farmers, the related industrial groups, and consumers do not exist as separate and independent groups, but each is dependent upon the others.

The depression of the thirties gave a new emphasis to the terms "equality," "stability," and "security" and applied them to agriculture as well as to other groups. Moreover, the attainment of these ideals was sought largely through broader governmental activity. As a result agriculture has become dependent in part, also, upon governmental planning and appropriations.

The so-called "agricultural problem" then breaks down into various problems as it is viewed by different groups. To farmers it is primarily a question of prices received for their products, and the prices paid for things bought, for these directly affect their net incomes; to consumers it affects the cost of food and other items of living costs; to industries related to agriculture, it affects the volume of farm products to be handled and the market for their industrial products; to workers in these industries and on farms it affects employment; to all taxpayers it affects the burden of taxes. Each group tends to favor such measures as contribute to its own welfare. Besides, measures which require public action must be acceptable politically if they are to gain approval.

From a practical standpoint we are face to face with some solution of this whole problem. The experience of the past thirty years in trying to apply satisfactory measures by means of legislation indicates how complex a problem we face. Small wonder that the question is confused in the thinking of so many people. For a beginning study the whole of this problem is too ambitious a goal; rather we must begin with the basic elements of the situation.

It is necessary first to restrict our approach to those phases which apply directly to farmers and only incidentally to other groups. The farmers' interests, however, are very broad for they encompass the whole of agriculture. For purposes of studying agriculture at closer range, it has been divided into a number of specialized parts or departments. Thus the problems of production have become highly specialized under the headings of soils, field crops, horticultural crops, meat animals, and dairy production. These developments have in turn called for extensive work in closely related fields such as agricultural engineering, veterinary science, and entomology. The economic phases, which are concerned with how farmers make a living, are of course dependent upon the production departments but apply particularly to the financial aspects of agriculture.

The Role of Agricultural Economics

Agricultural economics may be approached from two broad aspects: the first involves the general economic relationships of agriculture to other groups; the second applies to the management and operation of individual farm units. These two aspects have a considerable area of common ground, and both have a social bearing which relates to the welfare of farm people.

In the short span since World War II the economic problems of agriculture are again coming to the front. Basically they cannot be listed as new problems but rather as new expressions of old problems whose roots extend far back into our history. Quick and easy solutions, therefore, are not to be expected.

The abnormal conditions of the past two decades greatly affect the background of students entering the college level of training. Most were born during the depression period of the thirties, but the period during which they have observed and gained their experience with agriculture has been almost wholly during the prosperous era of the war and postwar years. A longer perspective is needed to understand the effects of periods of adversity. Further, it is natural that the earlier interests of farm youths turn to the more objective processes of production. The economic phases relating to management and particularly to relationships of the farm to outside agencies develop somewhat later.

In entering upon the study of agricultural economics it is essential that the student know something of the background out of which the current problems have developed and also have a working knowledge of the various parts of the subject. The objective of this volume is to lay the basic groundwork of how American agriculture has developed to its present situation, the economic relationships involved, both by the industry and its many individual units, and why these relationships are so complex.

This groundwork, therefore, covers a considerable range. We begin with a history of the development of American agriculture during the period of our national history, which is covered in three parts. The first extends from 1776 to 1860 and embraces the broad sweep of westward settlement, the application of machinery to farming, and the earlier development of transportation and markets. The second carries on to 1914 during which time agriculture was commercialized as farmers in the newly settled areas exploited their land resources and poured a rising flood of products upon the markets. Overproduction, falling prices, and conflict with industrial interests led to early organizations of farmers. Finally the period since the beginning of World War I has witnessed the drastic adjustments of our agriculture to war and peace. Two world wars and a world-wide depression within a third of a century seriously upset the normal stability of agriculture and called forth legislative efforts to restore this stability, an ideal which as yet has not been achieved.

We next examine our farm production not as individual units, but as one of the major segments of American economic life. As an industry agriculture differs greatly from other lines, and its adjustments to what to produce and how much are less precise.

On the other side of the picture is demand, as expressed in what things people want and their ability to buy them. Although farm products fall largely in the groups of necessities, the demand for them is closely related to the incomes of consumers.

Prices of farm products obviously affect incomes, but they do more. Under normal operation the price structure operates to balance the supply of farm products with the demand for them. Because of their flexibility prices of farm products have characteristic patterns. What happens to farm products after they leave the farmers' hands and the agencies involved in getting them to the final consumer form parts of the huge business of marketing. How much of the consumers' dollar spent for farm products goes to the farmer and how much to marketing services is an interesting question.

Through cooperative organizations, many farmers with small-sized businesses join forces to gain the advantages of larger business units. Such

efforts are applied to the marketing of farm products, the purchase of farm supplies, and to many educational and service activities.

While most of our farm production is used within this country, the part which goes into foreign trade has a significant effect upon farm prices. We are dependent also upon foreign sources for many agricultural products. The kinds and amounts of farm products which move in our foreign trade as exports or imports and the limitations upon that trade exert much influence both upon farmers' welfare and the national diet.

Under our commercialized production considerable amounts of capital are required for farm operation and still more for farm ownership. Because of limited capital many farmers must rely on credit. The use of financial resources, the sources of credit for various uses, its cost, and its intelligent use are of individual and national concern.

Expansion in governmental activities, Federal, state, and local, calls for increasing support through taxation. The burden of these taxes, the many forms in which farmers contribute to them, and the services provided by government are not generally understood. During recent years many new demands have been made upon government, most units of which have developed expensive spending habits.

Only recently has public attention been aroused to the wasteful exploitation of agricultural resources which has long prevailed. Gradually a constructive pattern of land use and soil conservation is being developed. Intelligent use and conservation of these resources is desirable for current production and is necessary if future production is to be guaranteed.

American agriculture is made up of a large number of individual units, which differ greatly in their resources. Farm management applies primarily to these individual units. It consists of so organizing the available resources and so conducting the operations both within and outside the farm as to secure the greatest net income consistent with proper conservation of the farm's resources. In pursuing these objectives management makes use of records which not only measure the results on the individual farm, but also afford a means of comparison with other farms operated under like conditions.

Farm life has a human as well as an economic aspect. This human aspect is concerned with the level of living and pertains both to the farm family and its comfort and to the development of the community through adequate schools, churches, and other activities and services.

Finally agriculture does not operate alone but is an integral part of a complex economic structure. Its relationships and interdependence with many other groups and with government are a necessary part of the picture. There are in this picture many contradictions and many unsolved

problems. The solutions which will serve agriculture in the long run will be those which also best serve the national interest.

With so wide a range of specialized material it is obvious that the treatment of each part must be severely limited. The aim is to introduce the student to the important phases of agricultural economics rather than to explore all the problems which currently call for solution. These problems can be attacked more intelligently after a groundwork has been laid and a broad perspective of the problems has been developed.

Chapter 2. THE PERIOD OF SETTLEMENT AND TRANSFORMATION, 1776 TO 1860

During the long colonial period the American settlers had made the transition from European methods of agriculture to the rugged life of the wilderness. This period served as a testing ground for a wide variety of crops—some borrowed from the Indians and others introduced from Europe. Livestock was introduced to provide for the settlers' needs. Their first task was to carve farms out of the wilderness and to maintain themselves in the meantime (Fig. 1). During the colonial period the foundations were laid for later development, although little progress was made toward agricultural improvement.

The area of settlement paralleled the coast and extended inland for an average of 255 miles.[1] Oxen and horses were the sources of farm power, but crude wooden plows, harrows, and wagons were the only tools on which the power could be used. Hand tools predominated—the scythe, sickle, hoe, flail, and ax. The struggle to clear enough land for food production and to construct shelter, and often to provide protection against hostile Indians, absorbed much of the settlers' energy. Transportation was largely by water or by trails.

Under these conditions farming in the North developed on a self-sufficient basis, in which nearly all the food, clothing, tools, and furniture were homemade. The livestock, which had originally been imported from Europe, had deteriorated under the rigors of frontier conditions. In the South slaves furnished much of the labor supply, and farming developed on the plantation style with tobacco, rice, indigo, and sugar cane as the principal crops. Tobacco was not only the chief cash crop, but also the principal agricultural export. Cotton was of little importance before the Revolution.

The war period stimulated rather than injured agriculture. Relatively little rural area was devastated. Tobacco and rice were still exported by blockade runners, and profitable markets for food products developed in

[1] A Chronology of American Agriculture, 1790–1940.

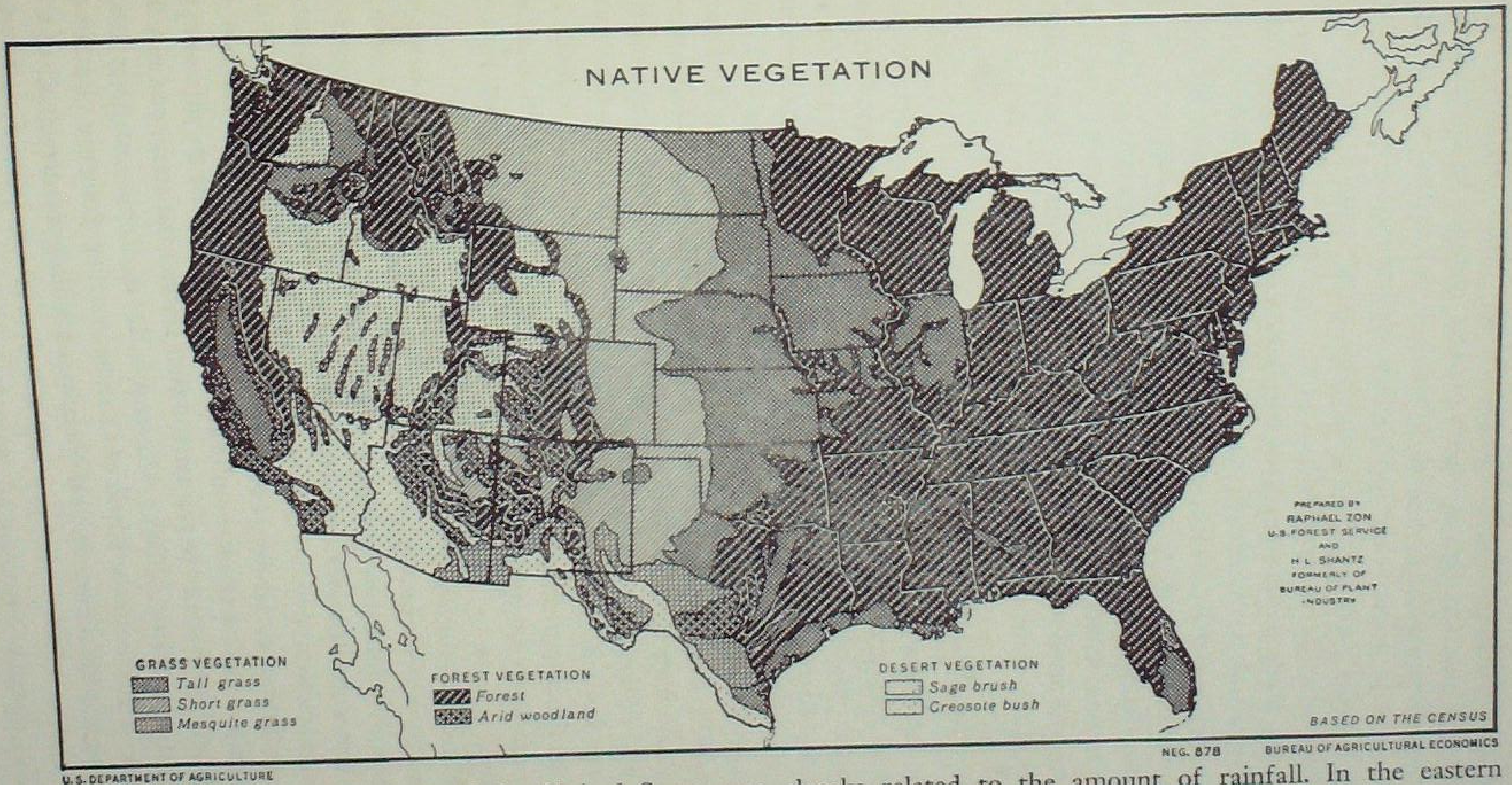

Fig. 1. The native vegetation of the United States was closely related to the amount of rainfall. In the eastern area, clearing the forest was an arduous task for the early settlers.

areas adjacent to army camps. Neither the war period nor that under the Articles of Confederation wrought marked changes in agriculture, although they shaped the first steps in the land policy that was to follow. By 1790 the new government had been established with a total population of 3,929,214. Of those gainfully employed, more than 90 per cent were engaged in agricultural pursuits.

From this point the development can best be traced through a number of lines described separately. From its influence on the future of agriculture certainly the most important phase of development was the acquisition and disposition of land. Meriting attention, also, because of their economic effects upon agriculture were the developments in farm machinery, transportation, crop and livestock production, the growth of population and markets both domestic and foreign, and the beginnings of education and organization.

The Acquisition of Land

Cession by States, 1781 to 1802. The United States government, at the close of the Revolution, was in possession of the territory lying east of the Mississippi River, south of the Great Lakes, and north of the present northern boundary of Florida. This area contained 888,811 square miles, or slightly less than 30 per cent of the present area of continental United States. The area lying west of the original 13 states, excluding Kentucky and Tennessee, was claimed by seven of the original states on the basis of their colonial charters. The other six, without western lands, insisted that this area was common property. Accordingly these "western lands" were ceded to the Federal government between 1781 and 1802 and, except for minor areas subject to private claims, became part of the public domain. Roughly half of this entire area came under the control of the Federal government.

The public domain includes lands owned by the Federal government and subject to sale or transfer of ownership under Federal law. It excludes lands rightfully claimed by private interests on the basis of occupancy or grants by other governments before the territory came into the possession of the United States.

Louisiana Purchase, 1803. The transfer of Louisiana from Spain to France in 1800 raised apprehension in the United States lest the Mississippi River be closed as an outlet to the sea and thus restrict the area between the Appalachian Mountains and the Mississippi River. Representatives were sent to Paris to purchase the Island of Orleans in order to secure control of the mouth of the Mississippi. Upon Napoleon's willingness to sell all of the province, but not a part of it, they negotiated, without specific authority, to purchase the entire province.

This purchase in 1803, for 15 million dollars, added a territory of 827,192 square miles. It extended from the Mississippi River to the Rocky Mountains and from Canada to the Gulf of Mexico (Fig. 2). This purchase nearly doubled the area of the United States.

Purchase of Florida, 1819. Florida, long held by England, was ceded back to Spain in 1783. Border disputes occurred regarding West Florida, and an Indian war resulted in an invasion of Florida by United States troops in 1818 and led to its purchase in 1819 for 5 million dollars. This purchase added 72,003 square miles to the area of the United States.

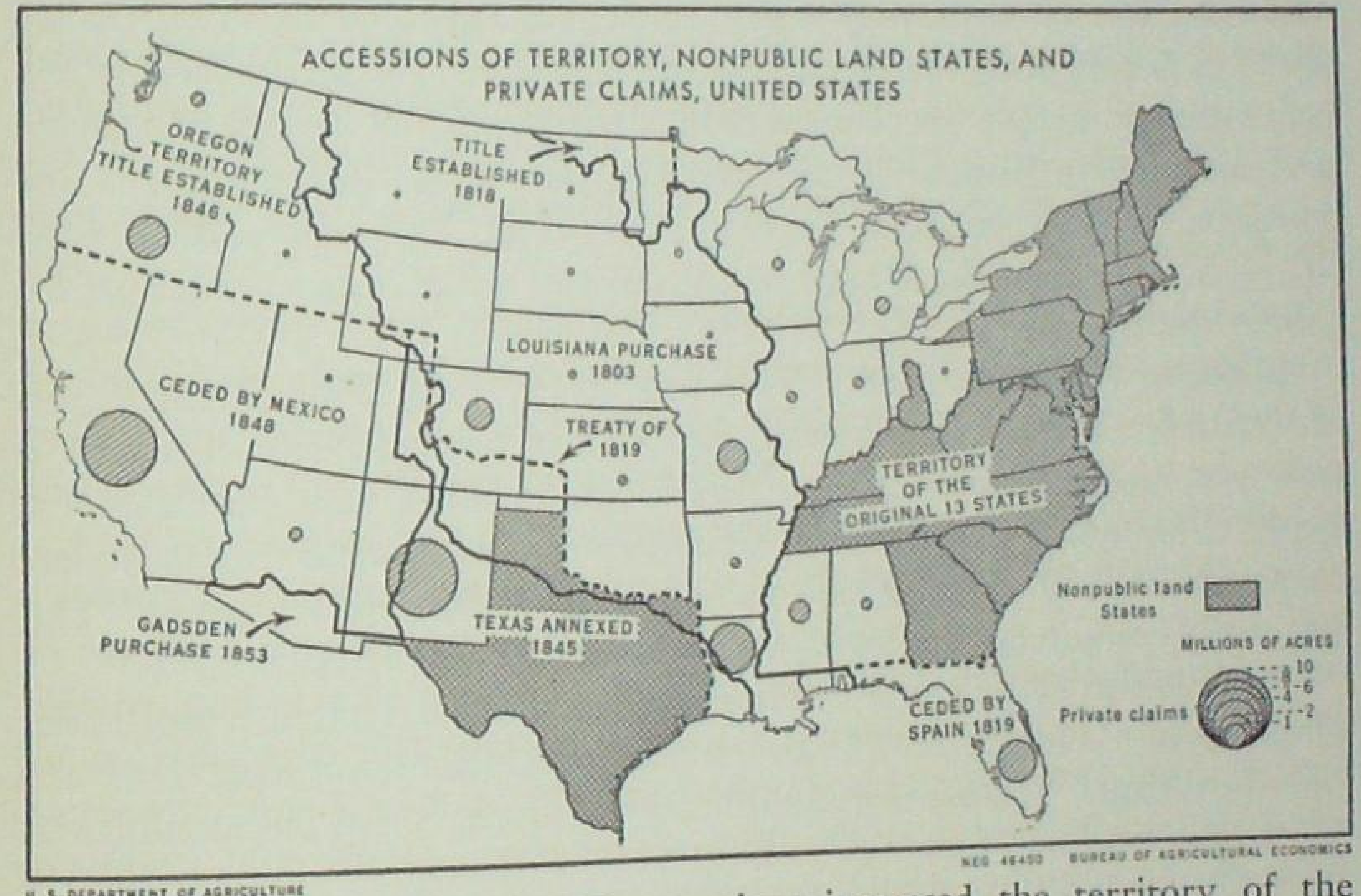

FIG. 2. Between 1790 and 1853 accessions increased the territory of the original 13 states more than three times and fixed the present boundaries of the continental area.

Texas Annexation and Purchase, 1845. Heavy migration from the United States to the Mexican territory of Texas led to unsuccessful attempts in 1827 and 1829 to purchase Texas. Shortly afterward further heavy migration was stimulated by the Mexican offer of land grants at 12½ cents an acre. These immigrants soon quarreled with the native inhabitants, rebelled, and in 1836 declared Texas a free and independent state. Requests of Texas for annexation to the United States were held up until 1845.

The Republic of Texas included 390,144 square miles, about two-thirds of which was in the present state of Texas. All lands in this latter area remained under control of that state, but the unoccupied and unappro-

priated lands outside the present boundaries of that state, and comprising roughly one-fourth of the total area, became part of the public domain.

Oregon Territory, 1846. By previous treaties, Oregon territory had been defined as lying between the Rocky Mountains and the Pacific Ocean, and from 42° north latitude to 45°40′. Both the United States and Great Britain held claims of long standing to this area. A compromise treaty in 1846 divided the area, giving the United States that part south of 49°. This treaty added 285,580 square miles to the national area, nearly all of which became part of the public domain.

Mexican Cession, 1848. The annexation of Texas was resented by Mexico, and a subsequent dispute over the boundary line between Mexico and Texas furnished the excuse for the unpopular Mexican War. By the peace treaty in 1848 the United States paid 15 million dollars to Mexico and received in return the disputed boundary area, California, and the Mexican territory between Texas and California. This action added 529,017 square miles to the United States, most of which was included in the public domain.

Gadsden Purchase, 1853. By treaty in 1853, the United States purchased from Mexico a strip designated as the Gadsden Purchase which is now the southern part of New Mexico and Arizona. This purchase was made to secure a more regular boundary line and added 29,640 square miles, practically all of which became part of the public domain. This purchase completed the present area of continental United States.

Thus within 63 years the territory included in the United States at the close of the Revolutionary War had been multiplied more than three and one-third times. The territorial expansion is summarized in the accompanying table.[2]

Area	Year	Square miles
Territory in 1790	....	888,811
Louisiana Purchase	1803	827,192
Purchase of Florida	1819	72,003
Texas	1845	390,144
Oregon	1846	285,580
Mexican Cession	1848	529,017
Gadsden Purchase	1853	29,640
Continental United States	....	3,022,387

The acquisition of this vast area was dominated much more by political than by economic considerations. Of the total area more than two-thirds became part of the public domain. The disposition of a large part of this

[2] Statistical Abstract of the United States, 1947, p. 3.

land was to furnish a major economic influence in the development of American agriculture throughout the nineteenth century.

Disposition of the Public Domain

Following the Revolutionary War, the problem of administering the western lands fell to the new government. B. H. Hibbard points out seven reasons why early action on this matter was urgent.[3]

1. Public lands would enable Congress to make good its promise of land to soldiers who served in the Revolution.

2. They would provide a source of revenue to pay the national debt. Congress at that time had no taxing power.

3. Encouragement of settlement in the Northwest would provide added protection against Indian attacks.

4. Westward settlement would strengthen the political and commercial relations of the Eastern states with the settlements in Kentucky and Tennessee.

5. Some form of government must be established for the new territory.

6. Disposal of land for the public benefit on a vast scale was a problem.

7. Immigration was pushing to the west and lands would be settled illegally unless a legal basis was developed.

Two theories of land disposal prevailed: as a source of revenue, and as a means of encouraging settlement. In the beginning the first predominated, but it gradually gave way to the second.

Land Sales. The Congress under the Articles of Confederation took the first steps in land distribution. The Ordinance of 1785 provided for the rectangular survey of land into ranges, townships, and sections and stipulated that the land must be surveyed before it was offered for sale. Aside from very limited sales to individuals, Congress made two sales to companies of speculators who subdivided the land and sold it to settlers. The Ohio Company in 1787 obtained more than 800,000 acres in what later became southeastern Ohio, and the Symmes Company, a year later, 248,000 acres in southwestern Ohio. From a financial standpoint these sales in large lots proved unsatisfactory to the government, the companies, and the settlers.

Following the ratification of the Constitution Congress wrestled with the problem of land sales for more than half a century. The resulting plans were developed largely on a basis of trial and error. Sales were to be to individuals through a Public Land Office established in 1800. The problems involved the size of tract, the price per acre, and the method of payment. The changes made are indicative of the difficulties encountered.

[3] Benjamin Horace Hibbard, A History of the Public Land Policies, pp. 32–34.

The Act of 1796 provided for sale in 640-acre tracts at $2 per acre, one-half cash and the remainder payable in one year. In 1800, the size of tract was reduced to 320 acres, and the terms to one-fourth cash and the remainder in three annual payments. In 1804, the size of tract was reduced to 160 acres. By 1820 total sales under the credit system amounted to more than 19 million acres, annual sales exceeding 1 million acres from 1814 through 1819. Collections had not kept pace, however, and one-third of the total area sold reverted to the government.

The failure of the credit system led to new provisions in 1820 which further reduced the size of tract to 80 acres and reduced the price to $1.25 an acre, payable in cash. After 1832, a tract of 40 acres could be purchased. Cash sales, 1820 through 1841, totaled 74 million acres, 32 million of which occurred in 1835 and 1836. The panic of 1837 reduced sales greatly.

Preemption Act, 1841. The survey had not kept pace with the westward movement of settlers, and hence many settled illegally on unsurveyed land. Difficulties arose when these lands were surveyed and placed on sale, and Congress was petitioned for relief from loss of land and improvements. After repeated actions of this kind. Congress in 1841 legalized the illegal entry which it could not prevent. The Preemption Act gave to such settlers or squatters the first right to buy the land occupied when it was placed on sale. How much land was acquired in this way is unknown, as the records lumped all sales together. This act definitely gave preference to the actual settler rather than to the speculator. From 1841 through 1862, 69 million acres were sold.

Graduation Act, 1854. Under a uniform land price it was natural that islands of less desirable land would remain unsold. Under the Graduation Act of 1854, 77 million acres were offered for sale on the basis of $1 per acre if the land had been on the market for 10 years, and graduated down to 12½ cents an acre if unsold for 30 years. These lands were located in 12 states, eight of which were east and four were west of the Mississippi River. More than half were in Alabama, Missouri, and Arkansas. Of this total acreage about one-third was sold to actual or prospective settlers.

By 1860 the financial objective in the sale of lands had given way to that of settlement. The acquisition of land had become progressively easier. A total of more than 156 million acres, or roughly 245,000 square miles, of the public domain had passed into private hands. While this was less than one-eighth of the entire public domain, it was located largely in the rich central area which was destined to become highly important in agricultural production. Meantime the number of states had risen to 33, and the West was increasingly represented in legislative matters. Thus was laid the foundation for the next great step in distribution of the public domain when land could be had without price.

Other Land Disposition—Bounties and Grants. The public domain

passed into private hands not only by direct sale, but also by military bounties and by grants, the latter including those of a general character and specific grants for internal improvements.

Military bounties were granted first as an inducement to soldiers to enlist and later as a reward for service. As time went on grants became more liberal, until by 1856 a bounty of 160 acres was available to any soldier of the Revolution or subsequent wars including the Mexican War. These warrants were made assignable, and a large part quickly passed into the hands of speculators. Hibbard cites a total of 68 million acres as disposed of through military bounties, most of which antedated the passage of the Homestead Act.[4]

During the period under review Congress made extensive grants of public land to the states. In 1841, an act provided 500,000 acres each to 19 states, the proceeds of which were to be used for education, internal improvements, and colonization. In addition, specific grants were made for building wagon roads in Ohio and Indiana; canals in Ohio, Indiana, Illinois, Michigan, and Wisconsin; river improvement in Alabama, Wisconsin, and Iowa; and the beginnings of railway development in several states. Swamplands, useless for settlement, were granted to the states for development. Extensive areas were granted for educational purposes.

These grants were significant inasmuch as they were made chiefly to provide access to markets in a rapidly developing country and because the lands granted soon passed into private hands and thus swelled the area coming into agricultural production. Because of loose administration, fraud was prevalent and the opportunity was given for speculation.

Farm Machinery

Between 1800 and 1860 a veritable revolution took place in farm machinery. Even as late as 1830 much land was plowed with a wooden plow and prepared for planting with a wooden harrow. Corn was planted and cultivated with a hoe; small grains were broadcast by hand and harrowed in; hay was cut with a scythe and raked by hand; small grains were cut with a cradle and threshed either with a flail or by treading out with horses or cattle. The period of invention and experimentation got under way mainly in the decade of the thirties, while the general application of many machines occurred between 1850 and 1860.

The granting of 124 patents for plows between 1800 and 1830 indicates the efforts to improve this tool.[5] As early as 1797 Newbold had made a cast-iron plow. Many improvements were made, the most important

[4] *Ibid.*, p. 132.

[5] Percy Wells Bidwell and John I. Falconer, History of Agriculture in Northern United States, p. 209.

being that of Wood, who in 1819 made a plow of several castings which could be replaced as they became worn. Because of a widespread belief that iron plows poisoned the soil, they did not come into general use until after 1825. Iron plows would not scour in the prairie and bottom soils of the West. This difficulty was solved in the late thirties by the invention of the steel plow by John Lane and John Deere, working independently. By 1860 many factories were turning out iron and steel plows of improved types.

The laborious method of harvesting small grains received attention. Prior to 1803, when the cradle was introduced, a man with a sickle could cut one-half acre per day. With the cradle 2 acres could be cut, but binding was still by hand. In 1833 Hussey patented a reaper, and in 1834 McCormick secured a patent. These machines could cut 12 to 15 acres a day, but binding was still a hand operation. Reapers did not meet with general acceptance until a decade later, after many improvements had been made. In trials at Geneva, N. Y., in 1852, clogging of cutter bar, leaving uneven stubble, breaking of parts, and heavy draught were listed as common faults of the reapers entered.[6] Yet in competition with foreign makes in London in 1851 and at Paris in 1855, American machines were clearly superior. The development of the reaper not only reduced labor requirements in harvesting, but encouraged the expansion of acreage while reducing the weather hazard at harvest time.

Threshing by means of a flail yielded for each man only 8 to 16 bushels of grain a day, and the grain had to be cleaned by winnowing in the wind. By 1840 several threshing machines had been invented, most of which were operated by horses attached to a sweep or working in a treadmill. The Pitt machine, invented in 1836, threshed 20 to 25 bushels of wheat an hour. By 1860 larger and improved machines were coming into general use in the wheat-growing regions.

Haymaking machinery appeared along with the reaper, many of the early reapers being designed for both mowing and reaping. Difficulties were encountered in cutting close to the ground, in clogging, in cutting on uneven ground, and in turning at corners. The Wheeler mower, a two-wheeled machine with a movable cutter bar, invented in 1856, largely solved these difficulties.[7]

As early as 1812 a simple wooden hay rake pulled by a horse was in use. This was followed by a revolving wooden rake, but it was not until 1840 that hay rakes were mounted on wheels. Between 1840 and 1850 iron or steel teeth were substituted for wood. By 1860 tedders, hay forks, balers, and clover hullers had been invented.

[6] *Ibid.*, p. 292.
[7] *Ibid.*, p. 295.

Planting and cultivating were less critical; hence the shift from hand to machine methods occurred at a later date. Seed drills appeared about 1845 but were not rapidly adopted so that by 1860 a large part of the small grain, particularly in the West, was still sown by hand. Hand planters and one-row horse planters gradually repaced the hoe after 1840 for planting corn, and during the fifties the shift to various types of planters was rapid. Crude cultivators had appeared in the East by 1840; soon after the single-shovel and later the double-shovel plow came into use in the West. By 1860, the straddle-row type of cultivator was in use. The general use of cultivators improved the quality of the work and greatly reduced the amount of handwork. During the period from 1840 to 1860 great improvements had been made on the hand tools in use, and their cost had been cheapened.

The effects of these developments in farm machinery upon the agriculture of the North was startling. The average hours of labor in producing an acre of wheat was estimated at 56 in 1800 and 35 about 1840. In the same period labor on an acre of corn was reduced from 86 to 69 hours.[8] Falconer estimated that an Ohio farmer, using improved methods in 1860, used two-thirds as much labor as in 1840.[9] The larger production made possible by the use of machinery and power furnished by horses or oxen, together with the developments of transportation, made possible the shift from a self-sufficient to a commercial type of production. This shift, however, did not take place at the same rate in all parts of the area. On the frontier the lack of capital and the distance from supplies and markets retarded developments.

In the South the adoption of laborsaving machinery was somewhat slower. There was little manufacturing; so tools were fashioned by the local blacksmith or procured from the North.[10] This locally made equipment lacked standardization. In the intensive cotton areas the limited capacity of slave labor and the one-crop system resulted in the retention of crude tools after better ones became available. The value of slaves, which was $600 each in 1836, advanced to $1,000 in 1849 and to $1,400 in 1860.[11] Thus the capital which might otherwise have gone into machinery under a different system was invested in a labor force. Even so, the hours

[8] Martin R. Cooper *et al.*, Progress of Farm Mechanization, p. 3. U.S. Department of Agriculture Miscellaneous Publication 630, 1947.

[9] Bidwell and Falconer, *op. cit.*, p. 305.

[10] Lewis Cecil Gray, History of Agriculture in Southern United States to 1860, Vol. II, p. 792. Carnegie Institution of Washington Publication 430, 1941.

[11] Thomas Nixon Carver, Sketch of American Agriculture in Bailey's Encyclopedia of American Agriculture, Vol. IV, pp. 50–70. New York: The Macmillan Company, 1909.

of labor per acre of cotton were reduced from 185 in 1800 to 135 in 1840; nearly all of this reduction was in the work before harvest.[12]

Transportation

The development of the country, both in its rapid expansion to the west and in the integration of the more settled areas, depended upon transportation. At the end of the colonial period natural waterways formed the chief transportation facilities. These were supplemented by a few roads in the Eastern states.

From 1790 to the Civil War the development of the transportation system went through four rather distinct stages: the turnpike period, the introduction of the steamboat on western waters and in coastwise trade, the canal-building era, and the development of railroads.

The turnpike period had its greatest activity from 1790 to 1820. Much of this work was undertaken by private companies which expected to secure their dividends from tolls. Between 1800 and 1807 over 3,000 miles of turnpikes were built in New York, and by 1832, 2,200 miles had been constructed in Pennsylvania. One hundred eighty companies were active in road building in New England in 1810.[13]

Road building, however, could not keep pace with the needs, and the toll rates were prohibitive for hauling grain or flour for long distances. A demand arose for a network of government roads. The major result was the building of the Cumberland Road from Cumberland, Md., to Vandalia, Ill., a distance of 834 miles. It was begun about 1811 and completed in 1838.

River traffic took on a new importance following the invention of the steamboat. Flatboats had carried products downstream, but steam made upstream traffic possible. The number of boats and the volume of traffic increased rapidly on the Mississippi, Ohio, and Missouri rivers and their tributaries. Western products—grains, flour, hay, bacon, and potatoes—moved south to New Orleans, as did tobacco and cotton from points farther south. During the latter years of this period this river traffic was important in moving settlers from the East and South into the new western lands. Coastwise trade along the Atlantic seaboard developed to a high degree, carrying industrial products from the Northeast to the South and cotton from the South for manufacture in New England or for export.

The canal era was the logical next step to connect up the rivers and lakes. Following 1785 some local canals had been built, but it was from 1825 to 1850 that canal building reached its height. The Erie Canal was

[12] Cooper *et al., op. cit.*, p. 3.

[13] Everett E. Edwards, American Agriculture—The First 300 Years. U.S. Department of Agriculture *Yearbook*, 1940, p. 214.

begun in 1817 and opened in 1825. The cost of shipping a ton of freight from Buffalo to New York was reduced from $100 to $15, and the time was cut from 20 days to 8.[14] The success of the Erie Canal stimulated canal building in Pennsylvania, which by 1834 had a system of 954 miles, and also in Ohio, Indiana, and Illinois. Grants of Federal aid in the form of public lands gave public support to a part of this construction. In all 3,000 miles of canals were built. The Erie Canal greatly increased trade between the East and the West and was influential in the development of the West. Most of the other canals ran north and south, counter to prevailing trade movements.

Railway building began in 1828, but until 1850 railways were in the experimental stage. The first lines were built to connect up rivers and waterways. In 1840 there were only 2,818 miles of railroad mostly along the Atlantic seaboard. By 1850 the mileage had increased to 9,000 miles, but lines west of the Alleghenies were short and disconnected. By 1860 the mileage had jumped to 30,000 and formed a substantial network in the North, extending westward somewhat beyond the Mississippi River. The South was less well supplied. For the most part the railways ran east and west and afforded rapid and cheap transportation between the East and the expanding West but resulted in a reduction of trade between the West and South. Public land grants aided materially in railway building between 1850 and 1860.

All these means of transportation were instrumental in opening up the West, in securing supplies, in developing outlets for farm and industrial products, and in making surpluses of the West more available to the East and South. By 1860 the railroad had clearly demonstrated its superiority over the canals; although some of the latter continued to be used for many years.

Crop and Livestock Production

Because of widely varying conditions the agricultural production of the Northeast, West and Northwest, the South, and the Pacific Coast during the period before 1860 followed divergent but related patterns. The task of clearing the forest which originally extended from the Atlantic westward beyond the Great Lakes on the north, and even across the Mississippi River farther south, resulted in a self-sufficient type of farming as the line of settlement moved westward.

Northeast. In the Northeast, grass, corn, and wheat were the standard crops. The first two were used for feed crops and the wheat for flour. Minor grain crops were grown to a limited extent. Some specialized areas

[14] *Ibid.*, p. 218.

of production developed, as market gardening near the larger towns and cities, fruit in some areas, and tobacco in the Connecticut Valley.

Improvements in livestock were ushered in between 1800 and 1815 by the importation of merino sheep which attained a great popularity until falling prices from 1816 to 1820 made the fine wool sheep unpopular. Beef production was carried on extensively in the Connecticut Valley. Importation of purebred cattle first occurred about 1820, but improvement of native herds was slow. Between 1830 and 1840 the quality of hogs was much improved by the addition of imported lines.

The opening of the Erie Canal gave strong competition in the production of pork, wheat, and wool, the latter of which was already on the decline. From 1840 to 1860 wheat production shifted farther to the west, sheep production declined markedly, and hog production became a side line in connection with dairying. The dairy industry took up much of the slack; improved dairy breeds were introduced and production increased greatly, first of cheese and later of butter and market milk.

With the seemingly unlimited areas of land it was to be expected that land when cleared would be farmed exhaustively. Areas of less productive soils soon registered the effects in lower yields. Fortunately the diversified production of the area mitigated the damage. By 1840 rotations were developed in many sections, gypsum was being applied, and livestock farming practiced. In southeastern Pennsylvania, for example, three systems were practiced: on the best land a rotation of corn, oats or barley, wheat, and clover; on less fertile land a grazing system, consisting largely of pasture and hay and used for dairy and beef production; and a mixed system between these two.[15] Crop yields varied widely, with averages for corn from 20 to 25 bushels per acre and wheat 10 to 15 bushels.[16]

The lure of western lands was felt early, particularly in the hilly areas. Between 1820 and 1830, 39 towns (townships) in Vermont and 61 in New Hampshire, mostly in the southern parts of these states, declined in population.[17] The coming of the railroads diverted the rural population both into industrial activities in the growing urban centers and toward the new lands to the west. This movement resulted in the abandonment of many hill farms, most of which should not have been settled. The growth of urban centers also stimulated the shift toward more specialized lines of production in the areas best suited by natural conditions and accessibility to markets.

West and Northwest. The earliest settlements in the timbered areas of Ohio, Indiana, Kentucky, and Michigan followed the self-sufficient

[15] Bidwell and Falconer, *op. cit.*, p. 261.

[16] *Ibid.*, p. 101.

[17] Harold Fisher Wilson, The Hill Country of Northern New England, p. 26. New York: Columbia University Press, 1936.

pattern of the frontier. By 1830 the Mississippi River was the frontier boundary, but much of the prairie areas of western Indiana and Illinois had been by-passed in the initial movement to the west. Small prairies, where open land could be combined with adjacent timberland, were settled readily, but the big prairies, generally thought to be unproductive, posed a new problem. Settlers had come to depend on the forests for wood, water, shelter, fencing materials, and stone for building. The prairies afforded none of these, iron plows would not scour in the soil, roads were impassable in the spring, and when the drainage was poor, fever and ague abounded. On the other hand, the task of clearing was not necessary, and the operation of machinery then coming into use was easier. The invention of the steel plow, the settlement of other lands, and finally, the coming of the railroad brought about a rapid settlement of the prairies and a marked shift in agricultural production.

A pamphlet published in 1855 advertising railway lands in Illinois perhaps stresses the favorable side of the picture.[18]

> It is a dark rich soil, one to five feet in depth. After the first year's tillage the ground is in a high state of cultivation. It will then produce with less labor as large a crop as any farm in the eastern or middle states, valued at $100 to $150 per acre. . . . The cost of transporting wheat direct from the company's lands, 100 miles from Chicago to New York is 30 to 35 cents per bushel. Corn costs about 27 cents to put in the New York market from land along the railroad, 100 miles back of Chicago.
>
> Small agricultural tools are more extensively made at the east, but reaping, mowing, and threshing machines are extensively made at the west. Spades, shovels, etc., you can buy cheaper at the east, but plows of different kinds you can buy as reasonable here. Reaping machines are almost altogether used at the west. They cost $170. They will cut 14 acres of wheat per day. Contracts for reaping are made at 62½ cents per acre.
>
> Good milk cows can be bought at from $15 to $20. Good well broken working oxen can be had at $50 to $80 per yoke. Horses vary at from $50 to $75 each.
>
> Hedging has become a trade to which a class of men devote themselves. They furnish the plants and set them in the ground and cultivate them for four years at 15 cents per rod per year, making the whole cost of hedge 60 cents per rod. At the expiration of four years when the last payment upon the hedge is due, it is a perfect barrier against bulls, pigs, and all other animals.

The lines of settlement into the West tended to follow the navigable waterways and areas of specialized production developed far ahead of the self-sufficient type which was so widely prevalent. By 1840 the bluegrass area of Kentucky, southeastern Ohio, and the lower Missouri Valley had developed commercial production for water shipment southward. Corn was the leading crop and was well adapted to rich soils. It was grown

[18] Pamphlet, Illinois Central Railroad, 1855.

first in the river bottoms, then spread rapidly to the north and west as the prairies were opened up. On upland or sandy soils wheat was the leading crop. How rapidly corn and wheat spread over this western area is shown by the Census reports from 1840 to 1860 (Table 1).

Hay was secured almost entirely from native grasses, and oats production increased somewhat faster than for the country as a whole. Toward the end of the period flax attained some importance in Ohio and Indiana.

Except along rivers where water transportation was available, high costs prohibited the marketing of corn directly. It was therefore converted into cattle, hogs, and corn whisky. The cattle-feeding industry which had developed near eastern markets moved westward first to Pennsylvania, then to Ohio, from which state cattle were driven over the mountains to eastern markets in 1805. The cattle-producing areas moved westward somewhat ahead of the feeding areas. Railroad shipment to the east began by 1840, and in another decade the increase of railroads and the beginnings of the packing industry in Chicago ended the cattle drives to the east. By 1860 Texas cattle were coming into Iowa, Missouri, and Illinois for shipment east or for slaughter at Chicago.

The early hogs in this area were of the "razorback" type and were raised largely on mast with corn to finish them for market. By 1810 hogs were driven overland to eastern markets. Hog production did not keep pace with corn production, but by 1840 the type of hog was undergoing rapid change. Pork-packing centers were developing, chief of which was Cincinnati.[19]

Sheep raising became important in Ohio and Michigan in the forties, moved westward, but declined in numbers during the fifties, as wheat production increased.

Agriculture in the western and northwestern area was on an exploitative basis. This condition was encouraged by the rich soils, the development of machinery, and the opening up of the prairies. Soil improvement was talked but little practiced. Emphasis was placed on those kinds of crops and livestock which would bring the greatest cash return. Production per man rather than per acre was the goal. Continuous cropping brought reduced wheat yields in Ohio in the late fifties, but over most of the area exploitation had not progressed far enough to force a change of management.

South. Because of diversified conditions agricultural development in the South was varied with an emphasis on commercial crops in well-adapted areas. Prior to 1800 the commercial crops were tobacco, grown chiefly in Virginia, Maryland, and North Carolina; rice in South Carolina and Georgia; sugar cane in Louisiana; and cotton in South Carolina and

[19] Bidwell and Falconer, *op. cit.*, p. 493.

Georgia. The introduction in 1786 of long-fibered sea-island cotton adapted to the coast lowlands; the invention of the cotton gin in 1793, which made short-staple cotton profitable; and the development of the English textile industry combined after 1803 to place cotton in the forefront among southern crops. Cotton production in 1800 was 73,222 bales; in 1840, 1,347,640 bales; and in 1860, 3,841,416 bales.[20]

TABLE 1. CORN AND WHEAT PRODUCTION IN SELECTED AREAS AND STATES*

Division and state	1840		1850		1860	
	Total (thousands of bu.)	Per cent of U.S. total	Total (thousands of bu.)	Per cent of U.S. total	Total (thousands of bu.)	Per cent of U.S. total
Corn						
United States	377,532	100.0	592,071	100.0	838,793	100.0
New England (6 states)	6,993	1.9	10,176	1.7	9,165	1.1
New York	10,972	2.9	17,858	3.0	20,061	2.4
Pennsylvania	14,240	3.8	19,835	3.3	28,197	3.4
Ohio	33,668	8.9	59,079	10.0	73,543	8.8
Indiana	28,156	7.5	52,964	8.9	71,583	8.5
Illinois	22,634	6.0	57,647	9.7	115,175	13.7
Michigan	2,277	0.6	5,641	1.0	12,445	1.5
Iowa	1,406	0.4	8,657	1.5	42,411	5.0
Missouri	17,333	4.6	36,214	6.1	72,892	8.7
Wheat						
United States	84,823	100.0	100,486	100.0	173,105	100.0
New England	2,014	2.4	1,091	1.1	1,083	0.6
New York	12,287	14.5	13,121	13.0	8,681	5.0
Pennsylvania	13,213	15.6	15,368	15.3	13,042	7.6
Ohio	16,572	19.5	14,487	14.4	15,119	8.7
Indiana	4,040	4.8	6,214	6.2	16,848	9.7
Illinois	3,336	3.9	9,415	9.4	23,837	13.8
Michigan	2,157	2.6	4,926	4.9	8,336	4.8
Wisconsin	212	0.2	4,286	4.2	15,658	9.1
Iowa	155	0.2	1,531	1.5	8,449	4.9
Missouri	1,037	1.2	2,982	3.0	4,228	2.4

* Source: U.S. Census, 1840, 1850, and 1860.

Many parts of the South were not generally adapted to the commercial crops because of climate, soils, or topography. In these areas, and especially in what came to be the Border states,[21] general farming gradually

[20] Edwards, *op. cit.*, p. 209.

[21] The Border states included Maryland, Delaware, Virginia, North Carolina, Kentucky, Tennessee, and Missouri.

developed much like that of adjacent states on the north. Many upland areas of the South combined cotton production with more general farming. Intensive cotton growing spread from the initial states of South Carolina and Georgia to North Carolina and Virginia, then turned to the west. By 1821 Alabama, Mississippi, Louisiana, and Tennessee were producing one-third of the cotton and by 1834, two-thirds.[22] In 1850 the leading states were Georgia, Alabama, Mississippi, and South Carolina, in the order given. By 1860 the first three of these states produced more than half the crop, and Texas was becoming important.

Because of its high labor requirements, cotton production was early associated with slave labor, which was most economically handled under the plantation system. Only one-fourth of the slaveholders had more than 10 slaves, but those large plantation owners were powerful and secured the best lands. One-half the slaveholders had five or less slaves.[23] In addition there were large numbers of yeomen farmers on less fertile soils who cultivated their own farms on a self-sufficient basis.

Early livestock development had much in common with that farther north. As settlement progressed much variation appeared, from the highly developed husbandry in the Nashville basin of Tennessee and the bluegrass areas of Kentucky, to the intensive cotton areas where stock of nondescript types were left to shift for themselves.[24] In 1840, of all the Southern states, exclusive of Texas, the Border states had 53 per cent of the cattle, 68 per cent of the horses and mules, 66 per cent of the hogs, and 80 per cent of the sheep. By 1860, largely because of the expanding livestock industry in Texas, the proportions in the Border states declined. The specialized crop areas did not produce enough livestock for their needs and bought much from the Border states and the North.

"Soil mining" was prevalent in the South as in the North. It was most serious in the areas of intensive cotton and tobacco raising, in which the land was cropped continuously until no longer profitable, then a move was made to new land. By 1850 soil exhaustion was widespread in Virginia, North Carolina, South Carolina, and Georgia.[25] In the eastern Border states improved methods were making a beginning in the regeneration of agriculture.[26]

Pacific Coast. The discovery of gold in California early in 1848 pre-

[22] Ernest L. Bogart and Donald L. Kemmerer, Economic History of the American People, 1942, p. 447.

[23] *Ibid.*, 1947, p. 406.

[24] Gray, *op. cit.*, pp. 836–837.

[25] *Ibid.*, p. 910.

[26] *Ibid.*, p. 916.

cipitated a great migration of gold hunters. California had 80,000 immigrants by the end of 1849.[27] Those who traveled overland created new outlets, especially for cattle along the routes of travel. The lure of gold was more spectacular than farming, but the demands for food led to a rapid development of food products. In 1850 crop and livestock production in California was negligible, but by 1860 wheat production was 5,928,000 bushels ,or 3.4 per cent of the country's total.[28] Potato production reached 1,789,000 bushels. Cattle numbers were 3,106,000; hogs, 1,201,000; wool production was 2,683,000 pounds; and a beginning was made in dairying. This rapid development following 1850 caused the frontier to jump across the Great Plains and the Rocky Mountains to the Pacific Coast. The wide in-between areas remained to be developed.

Growth of Population and Markets

Between 1790 and 1860 the growth of population and the development of markets influenced greatly the development of agriculture. In the earlier part of this period, except for limited areas of specialization in the South, production was largely on a self-sufficient basis. Such a basis provided little surplus for sale and little income for the purchase of supplies. Not only food, but clothing, furniture, and tools were home-made. As the frontier moved westward and was replaced by a more settled type of production, the surplus beyond family needs was disposed of in nearby areas. Between 1810 and 1840 eastern agriculture led in the transformation from a self-sufficient to a commercial basis.

Many influences contributed to this change: The growth of population with its rapid movement to the west, and the increase in urban centers; the development of transportation facilities; the development of farm machinery; and the rise of the factory system.

The population of the country multiplied eight times from 1790 to 1860. Natural increase brought most of the change, although immigration added 2 million from 1820 to 1850, and another 2.6 million by 1860 (Table 2). The westward movement of this population was indicated by the rate of land settlement and by the increase in the number of states to 26 in 1840, 31 in 1850, and 33 in 1860. While this population was predominantly rural in the earlier part of the period, the urban population increased its proportion of the whole, especially after 1840. Urban centers of more than 8,000 increased from 5 in 1790 to 33 in 1840 and 141 in 1860.[29]

Natural waterways afforded the earliest outlets to markets and the

[27] Bogart and Kemmerer, *op. cit.*, 1942, p. 376.

[28] Bidwell and Falconer, *op. cit.*, pp. 323, 375, 394, 411, 436.

[29] Bogart and Kemmerer, *op. cit.*, 1947, p. 368.

means of securing supplies, since costs of overland shipment were largely prohibitive. Canal, road, and railroad construction progressively opened new areas and cheapened rates. Machinery development made possible large quantities of marketable farm products. The rise of the factory system which began about 1814 in time made possible the purchase, not only of improved farm equipment, but also of many household products. Many manufacturing processes were thus shifted from the farm and home to the factory. The beginning of commercial farming furnished the income to make the exchange possible.

Table 2. Population Growth, Total and Agricultural, United States, 1790–1860

Date	Population (thousands)*	Farm population (thousands)†	Per cent of gainfully employed persons in agriculture†	Number of states
1790	3,929	......	90.0	13
1800	5,308	......	....	16
1810	7,240	......	....	17
1820	9,638	......	83.0	23
1830	12,866	......	....	24
1840	17,069	9,012	77.5	26
1850	23,192	11,680	....	31
1860	31,443	15,141	....	33

* U.S. Census.
† A Chronology of American Agriculture, 1790–1940.

As a result of these influences and the competition which developed between areas, major lines of agricultural trade developed. Eastern agriculture, which came into competition with the West after the opening of the Erie Canal, shifted its market production largely to vegetables, fluid milk, cheese, butter, apples, and hay. These products found their outlets largely in the growing urban centers of the area. The West had surpluses for market of corn, wheat, hay, pork, lard, bacon, flour, and whisky. These products moved by water largely to the south until transportation by canal and railroad shifted grain and pork movement to the east. The West secured its supplies of manufactured goods largely from the East. The South marketed cotton, tobacco, and rice, much of which moved to eastern ports for distribution to domestic or foreign trade, in return for manufactured goods from the East and food supplies from the West. In addition to these major lines of trade, increasing amounts of locally produced items were used within each section as centers of industrial production and distribution developed.

Most of the agricultural production entered the domestic market. Cotton was the outstanding exception. As early as 1806 to 1810 approximately two-thirds of the cotton was exported. The proportion exported rose to more than four-fifths between 1826 and 1840, then declined slightly.[30] Tobacco, cereals, and meat products accounted for a minor part of agricultural exports.

Agricultural Education and Organization

Agricultural education of an informal type was initiated in the formation of agricultural societies. These organizations, several of which were formed before 1800, were of an aristocratic nature. They served, however, to publicize improved practices as well as the results of individual experimental work being carried on by some of their members.[31] Between 1817 and 1825, and again from 1835 to 1840, many county agricultural societies were organized under the stimulus of state aid. These later organizations were of a more democratic nature. By 1852 they numbered 300, and 941 in 1860.[32] Among their activities the holding of fairs was outstanding.

Agricultural fairs of a modern type were started in 1810 in Washington, D.C. The idea spread and by 1841, 12 county fairs were held in Tennessee alone; by 1859 fairs had expanded to a state and divisional basis.[33] These fairs furnished an opportunity for discussion of improved methods, a display of farm products, and contests in the use of plows, reapers, and other machines.

A third educational influence was the rise of agricultural papers and journals. The first publication was started in 1810, and by 1850 more than 40 had been launched, although many were short-lived. These farm papers cooperated with the agricultural societies and fairs, published information on farm practices, and campaigned for education. Self-improvement was popular, but theory was suspected, and book farming was resisted.

Out of this period there developed an agrarian creed with three cardinal points: (1) the farmer is completely independent economically; (2) agriculture is the fundamental occupation, and all others are dependent upon

[30] Bogart and Kemmerer, *op. cit.*, 1947, p. 250.

[31] Angus McDonald, Early American Soil Conservationists. U.S. Department of Agriculture Miscellaneous Circular 449, 1941. Jefferson and Agriculture, Agricultural History Series No. 7, p. 18. Washington, Jefferson, Lincoln and Agriculture, pp. 1–72, Bureau of Agricultural Economics, U.S. Department of Agriculture, 1937.

[32] Paul H. Johnstone, Old Ideals versus New Ideas in Farm Life. U.S. Department of Agriculture *Yearbook*, 1940, p. 114.

[33] Gray, *op. cit.*, p. 785.

it; and (3) agricultural life is natural and good, and city life is corrupt.[34] This creed was destined to be widely accepted and eventually to prove to be a barrier to progress.

The emphasis on education finally began to bear fruit in the offering in some schools and colleges of courses in agriculture and related sciences. In 1837 Michigan made legal provision for a state college for general and agricultural education, but it was 20 years later before students were admitted. At about the same time, New York, Maryland, and Pennsylvania provided for state-supported colleges of agriculture.[35]

Summary

From 1776 to 1860, American agriculture underwent a great transformation. The area of the country expanded three and one-third times, and a major part of this area was added to the public domain. The policy for distributing this land was changed many times, always in the direction of easier acquisition. Under it much land in the eastern half of the country went into the hands of settlers and speculators. Transportation was developed, linking together the settled parts of the country and bringing their products into competition. Farm machinery was invented and put into use, greatly reducing the labor and increasing the capacity of the farmer. In the longer settled areas agriculture had shifted from a self-sufficient to a commercial basis, and home industry had been largely transferred to the factories. Production had expanded apace, and some attention was being given to quality of products. Market outlets had been developed, leading to a considerable interdependence of different sections. A beginning had been made in improving agriculture through education.

Despite the significant advances of the period, basic difficulties appeared which were to cast a shadow far into the future. The liberal land policy became the forerunner of a still more extravagant policy. The uses for which land was adapted were of little concern then but eventually were to become a major problem. The rapid destruction of the magnificent forests not only reduced this natural resource, but led to serious damage from erosion and floods. The exploitative methods of cropping led to difficulties in some sections even before the end of this period; eventually they were to call for a major program for regeneration. The political and social lines of sectionalism had been sharply drawn leading to the Civil War, which was to bring new influences to bear upon agriculture. Thus our relatively recent programs emphasizing land use, conservation, flood control, and forest preservation are designed to remedy problems initi-

[34] Johnstone, *op. cit.*, p. 117.

[35] *Ibid.*, p. 136.

ated in this earlier period, but destined to become much more acute before necessity forced remedial measures.

QUESTIONS

1. What is meant by the "public domain"?
2. Through what steps was it acquired?
3. Through what means was the public domain disposed of before 1860?
4. What developments took place in farm machinery during this period?
5. To what extent had farm machinery come into general use by 1860?
6. What influence did transportation developments have upon agriculture during this period?
7. What influences led toward regional specialization in agriculture?
8. Trace the beginnings of agricultural education.
9. What were the characteristics of pioneer agriculture?
10. During what period could American agriculture be said to be in the pioneer stage?
11. To what kinds of farm products was commercial production first applied?
12. What influences during this period favored commercial production?
13. What influences retarded it?
14. For what reasons was the acquisition of land by individuals made easier as the period progressed?
15. Why was so little attention given to the conservation of our natural resources?

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Chapter 3. THE DEVELOPMENT OF COMMERCIALIZED AGRICULTURE, 1860 TO 1914

During the half century following 1860, the commercial phase of agriculture, already well developed in the cotton and tobacco areas of the South, became an accomplished fact for much of the country. The outpouring of farm production not only supplied the rapidly growing population here, but threw upon foreign markets a rising flood of products which reached its peak at the end of the century. Dr. Nourse termed this expansion "the hasty and pell-mell outpouring of native land-grabbers and foreign immigrants upon an extraordinary stretch of virgin land."[1] After the turn of the century he noted "that there was coming to be an approach toward more stable adjustment of agriculture, industry, and international trade."[2]

This development will be noted first in the effects of the Civil War, then traced briefly as influenced by the land policy, the westward movement of population, farm machinery, transportation, farm production, growth of population and markets, farmers' organizations, and measures for agricultural education.

Effects of the Civil War on Agriculture

The Civil War wrought widely different effects upon the agriculture of the North and the South. In the North rising prices, army demands, and a strong export demand for wheat stimulated production, particularly of cash crops, and agriculture prospered. The withdrawal of men for the army created a labor shortage and accelerated the adoption of laborsaving machinery, with which production was expanded. In contrast, southern agriculture was ruined. During the war exports of the staple crops, cotton and tobacco, were cut off by blockaded ports, and the supplies previously secured from the North and West were not available. A temporary shift

[1] Edwin G. Nourse, American Agriculture and the European Market, p. 28.
[2] *Ibid.*, p. 39.

to grain and meat production resulted. Following the war the intensive cotton regions were in a desperate condition. In addition to war damage, the overthrow of slavery and the breakup of the plantation system had destroyed the means of production. Reorganization of production was gradually worked out through a marked increase in small farm units and by the introduction of the cropper system of tenancy. The scarcity of capital called for an extensive use of credit which tended to emphasize cotton, the most profitable crop, and to prevent diversification. Renewal of cotton production at the prewar level was delayed until 1879.

The Civil War also marked the end of the period of dominance of agriculture in the nation's economic life. Industrial development was stimulated by the war, and the succeeding decades witnessed the growth of large corporate businesses. Agricultural progress was also rapid, but on a basis of small individual units which, without adequate organization, were unable to hold their own in the competition.

Land Policy

Nearly 600,000 square miles of land area was added to the United States after 1860. Of this amount Alaska made up the major part; other parts were Hawaii, Puerto Rico, and smaller possessions. The Philippine Islands, acquired in 1898, and granted independence in 1946, is not included. Only small amounts of this area were suited to agricultural production.

The Homestead Act, 1862. The Homestead Act of 1862 marked the apex of land distribution to settlers. It has been classed as "the greatest democratic measure of all history."[3] It made real the ideal of free land toward which the earlier reductions in size of tract and in price, the leniency toward squatters, and the Preemption Act were but steps in a long trend. Payment of a filing fee, making certain improvements, and continuous residence for 5 years were the requirements for title to 160 acres. The first homestead was located near Beatrice, Nebr., about 85 miles southwest of Omaha. After 6 months residence and some improvement a settler could elect to secure title under the commutation privilege by paying $1.25 an acre.

Neither the framers of the Act nor the settlers under it recognized the differences in natural conditions as settlement pushed westward on the drier Plains area. East of the 100th meridian conditions favored general farming, and homesteading was generally successful. West of that line a more extensive type of farming was needed, for which the Homestead Act did not provide. By 1915, 154 million acres had been proved up under this Act. Much additional land, especially in timber and mineral areas,

[3] Roy M. Robbins, Our Landed Hertiage, The Public Domain, 1776–1936, p. 209.

was taken up as homesteads but under the commutation privilege was bought and turned over to lumbering and mining companies.

The operation of the Act was complicated by the continuation of previous measures—sales of surveyed land and settlement of unsurveyed land under the Preemption Act until its repeal in 1891 and by extensive new grants for internal improvements. These grants, chiefly to railways, retarded settlement on the land grants and caused so much conflict that they were discontinued in 1871.

Dick has summarized the criticism of the Act as follows:[4]

> The great weakness in the Homestead Act lay in the fact that it made homesteading too easy. The government encouraged failure by not requiring more than the mere minimum of a shack for a home, only 10 acres under cultivation, and a well. There was no mention of personal qualifications and equipment. Thousands were deceived into thinking that securing a piece of land was all that was necessary to make a competence for the owner. Following the great boom of the eighties when the tide of migration began to recede, central Dakota and western Nebraska and Kansas presented anything but a land of occupied farms. Everywhere was to be seen the scars of once-broken patches which were fast reverting to sod, a caved-in well, and the tumbled-down walls of sod shanties that had served their purpose in proving up for the settlers who had since left the country.

Tardy recognition of the different natural conditions came in the Timber Culture Act of 1873, the Desert Land Act of 1877, and the Timber Cutting Act and Timber and Stone Act of 1878. These acts gave larger acreages for settlement and attempted to prevent exploitation of timber and mineral lands. In the latter objective they were unsuccessful.

Land Grants. By 1860 grants of public lands for canals had ceased, but extensive grants for roads continued through the next decade. The extensive method of grants for general education, which had been begun earlier, was extended to the new states. The Morrill Act of 1862 extended government support to higher education by providing land grants as endowments for colleges to teach agriculture and the mechanic arts. By 1893 institutions of this kind had been established in all the states and territories. Some additional grants were made for public or private colleges. In all, more than a hundred million acres of public land was granted directly or indirectly for all educational purposes.[5]

From 1862 to 1871 very liberal grants were made to railways for constructing lines to the Pacific Coast. Earlier railway grants had been made

[4] From: The Sod-House Frontier, by Everett Dick. Copyright, 1937, D. Appleton-Century Company. Reprinted by permission of the publishers, Appleton-Century-Crofts, Inc., p. 131.

[5] Benjamin Horace Hibbard, History of the Public Land Policies, p. 343.

to the states, but now they were made directly to the corporations. Grants made to 1923 to states amounted to 38 million acres and to corporations to 91 million, a total of 129 million acres for railway purposes.[6] The railways thus became distributing agents for great areas of land, but in selling it they were less interested in securing settlers than in making money.[7]

By 1890 nearly all the humid arable lands had been settled. Taking up land continued, but it was largely grazing land.

The rapidity of land disposal was exceeded only by its rapaciousness. Commercial interests crowded out those of the individual settlers. Even among settlers fraud was widely employed in securing land. Vast areas of land, including rich resources in timber and minerals, went to corporations and speculators by grant or subterfuge to be used for their own profit. This was a natural result of generous but vague laws and lax administration over a far-flung area. The Indian lands were crowded upon, then absorbed, and the Indians moved to reservations. Some idea of the scope and relative size of areas by method of disposition is given in Table 3. This period achieved the ideal of free land but exploded its counterpart, that the land resources were inexhaustible.

TABLE 3. DISPOSITION OF PUBLIC DOMAIN TO JUNE 30, 1923*
(In Millions of Acres)

	Area Disposed
Sales, cash and credit	269
Grants for wagon roads, canals, river improvement	10
Grants for military bounties	68
Grants for education	100
Grants of swamplands to states	64
Grants for railways	129
Homesteads proved up	214
Related acts—Timber Culture, Desert Land acts	46
Timber and Stone Act, final entries	13
Total	913

* Source: Compiled from Benjamin Horace Hibbard, History of the Public Land Policies.

The U.S. Geological Survey was established in 1879, with one of its duties the classification of the public lands. In 1891 the Forest Reserve Act authorized the President to reserve timberlands. The Reclamation Act was passed in 1902, and the Forest Service was established in 1905. Some forest and mineral lands were withdrawn from entry. These measures met strong resistance by the exploiters. The First National Conservation Congress met in 1909. Thus gradually the drastic movement toward exploitation was checked and the beginnings of conservation were established. The Withdrawal Act of 1910 granted power to the President,

[6] *Ibid.*, p. 264.
[7] Robbins, *op. cit.*, p. 255.

limited only by Congressional action, to withdraw any public land from further entry. This Act has been hailed as "the most signal act . . . in the direction of a national land policy," made by Congress to that time.[8]

The Westward Movement

The westward movement of population already under way for five decades continued after 1860. Before that date the frontier had reached the Pacific Coast. During the sixties migration continued into the Mountain states. The completion of the first transcontinental railway accelerated the development of the cattle industry on the Great Plains and carried new settlers to lands homesteaded or purchased from the railroads. From 1861 through 1890, 11 new states were admitted, 10 of which were in the West and embraced nearly all of the Great Plains and part of the Mountain area. The last four states, all in the developing West, were admitted by 1912. As in the other parts of the country the first wave of settlement indicated but poorly the trend of agricultural development. The new and vastly different conditions encountered required a longer period of adaptation.

The westward movement added materially to the area in farms. The Census of 1860 reported 21 per cent of the land area in farms; that of 1910 reported 46 per cent. Another consequence was an increase in land values particularly in areas being settled (Table 4). For the United States per acre values of land and buildings increased 25 per cent from 1860 to 1900, then doubled by 1910. In the older settled areas, as Massachusetts and Pennsylvania, the rate of increase was relatively small. In recently settled states the rate of increase was more rapid, as in Illinois. In states being settled, as Nebraska, Texas, and California, land values were low but the rate of increase was high. In the Southeastern states land values fell following the Civil War and recovered but slowly until after 1900.

A further result was an increase in tenancy following the disappearance of free land and accompanying higher land values. Tenancy data began with 1880. At that time the New England and Mountain states had less than 10 per cent of tenancy; the North Central states, about 20 per cent; and the Southern states in which croppers were listed as tenants, about 36 per cent. Between 1880 and 1910 the rate of increase in tenancy was greatest in the Great Plains (West North Central and West South Central) and in the Mountain states—areas of later settlement. The rate of increase was intermediate in the region just east of the Mississippi River (East North Central and East South Central) and least in the eastern regions of longest settlement. The Pacific states retained a relatively low proportion throughout this period. Thus the westward movement not only

[8] Hibbard, *op. cit.*, p. 532.

resulted in the settlement of unoccupied lands, but brought about changes in land values and in the pattern of farm operation.

Farm Machinery

The Civil War stimulated not only the wider application of farm machinery, but also improvement of existing types. Oxen largely disappeared as a source of farm power. The reaper was greatly improved until it was superseded, first by the wire binder in 1873, then by the twine binder in 1878. This change, and the introduction of the steam tractor for threshing, greatly increased the acreage of wheat that could be harvested. The roller process of flour milling at about the same time improved the quality of flour from spring wheat. In the wheat areas on the Pacific Coast the horse-drawn combine was first used about 1885.

TABLE 4. VALUE OF LAND AND BUILDINGS PER ACRE, UNITED STATES AND SELECTED STATES, 1860–1910*

Year	United States	Mass.	Pa.	Ill.	Nebr.	Miss.	Texas	Calif.
1860	$16	$37	$39	$20	$6	$12	$3	$6
1870	18	34	46	28	12	5	3	12
1880	19	44	49	32	11	6	5	16
1890	21	43	50	41	19	7	8	33
1900	20	50	46	54	19	8	6	25
1910	40	68	56	108	47	18	16	52

* U.S. Census (figures rounded to nearest dollar).

In corn production improved plows, including gang and sulky plows, harrows, the checkrower in humid areas and the lister in dry areas, the riding cultivator, and the disk harrow gradually came into use and aided in preparing the seedbed, planting, and cultivation. Most harvesting was by hand, although the corn binder and corn harvester of the bull-wheel type had been developed. Haymaking was well adapted to machine methods. Improved mowers, sulky rakes, tedders, hay loaders, stackers, and balers came into use to reduce human labor.

Because of disrupted conditions and the type of labor available, machinery methods were adopted more slowly in the cotton areas. Gradually improved plows and harrows, cottonseed planters, fertilizer distributors, and cotton-stalk cutters came into use. Early attempts with mechanical pickers failed.

By the middle seventies silos were being used in dairying, and the refrigerator car made marketing easier. The Babcock tester for measuring butterfat and the cream separator appeared about 1890.

These improvements did not come all at once, nor were they put at once into general use. Throughout the period machinery was being improved in design, materials, and uses. By 1890 most of the basic equipment suited to the use of horses had been invented.

The value of farm machinery increased from 246 million dollars in 1860 to 1,265 million dollars in 1910.[9] The hours of labor required to grow and harvest an acre of wheat were reduced from 20 in 1880 to 12 in 1920; for corn from 46 to 32 hours; and for cotton from 119 to 90 hours.[10] From 1870 to 1914 farm employment increased 68 per cent; farm output, 184 per cent; and the amount of farm power and equipment, 329 per cent.[11] Thus did this period mark the general displacement of men by horsepower and machinery. Such replacement was at its best in areas of level topography and low rainfall adapted to large-scale operations.

About 1905 the gas tractor appeared. The early machines were ponderous and cumbersome and had open gears. Improvements came rapidly, but this type of power did not replace horses to any extent until the time of World War I.

Transportation

Following 1860 the development of transportation centered largely in the railroads. The increase in mileage by decades is revealing, as shown in the accompanying table.[12] Railway mileage increased eight times while

Year	*Miles*	*Year*	*Miles*
1860	30,626	1900	193,346
1870	52,922	1910	240,439
1880	93,267	1920	252,845
1890	163,597	Increase, 1860–1920	222,219

population increased three times. Of this total increase 126 thousand miles were built west of the Mississippi River. The first transcontinental railroad was completed in 1869, three others from 1881 to 1883, a fifth in 1893, and a sixth in 1909. The additional mileage (96,000) east of the Mississippi River provided a complete network in this area of industrial growth and concentration of population. This marked expansion was aided by very liberal Congressional grants of public lands and by state and local subsidies of various kinds.

Railway developments of other kinds were also made. Heavier roadbeds and equipment were built to accommodate the long hauls. By 1860 the

[9] Ernest L. Bogart and Donald L. Kemmerer, Economic History of the American People, 1942, p. 502.

[10] Martin R. Cooper *et al.*, Progress of Farm Mechanization, p. 2.

[11] *Ibid.*, p. 81.

[12] Statistical Abstract of the United States, 1947, p. 509.

wooden rails capped with strips of iron had been largely displaced by iron rails, which from 1870 to 1910 gave way to steel rails of increasing weight. Freight cars of 1900 had four times the capacity of those of 1870.[13] Higher speeds gave faster handling of products, and rates were steadily lowered from 1860 to 1900.

Railway building, while generously supported by public agencies, was left to private companies. In the earlier part of the period building was projected more rapidly than the growth of the country warranted. Moreover, serious abuses arose. Frauds in financing construction were common. Rates not only were high, but much unjust discrimination among shippers occurred.[14]

The farmers had not only favored railroad construction, but had also supplied much capital by buying bonds. Their attitude soon changed from support to hostility. They had seen the railroad grants take preference over settlers' claims and were aware of the railroad abuses. Even more pointed was the fact that grain prices in the latter sixties would scarcely pay transportation costs. Despite a falling price level which for grain was accentuated by the overproduction in the expanding West, farmers came to feel that the railroads and other forms of big business were responsible for their plight.

This discontent led to the organization of the National Grange of the Patrons of Husbandry in 1867, and by 1870 this organization popularly called the Grange, aided by other groups desiring to correct abuses, was able to enact the first effective state control measures. This legislation, which started in Illinois, set maximum passenger rates, prohibited discrimination in freight rates, and created a railroad and warehouse commission.[15] Similar legislation followed in a number of other states. The struggle over control continued for some years, leading to Federal legislation under the Interstate Commerce Act of 1887. Regulation and the competition among railroads led to a steady reduction of freight rates and, after 1898, to rapid consolidation of lines. Various modifications in regulatory laws followed, and by 1916 fairly complete regulation was established.

The constantly expanding facilities of the railroads and the increase in regional specialization of both agriculture and industry gave this type of transportation a clear lead over its competitors. During the first decade of this period extensive grants of public land were made for construction of wagon roads in Michigan, Wisconsin, and Oregon, the effects of which were local.

[13] Bogart and Kemmerer, *op. cit.*, 1942, p. 598.
[14] *Ibid.*, 1947, pp. 541–543.
[15] *Ibid.*, p. 544.

Except for that on the Great Lakes, water-borne traffic declined. Inland river traffic on the Mississippi and its tributaries was disrupted by the Civil War but was afterward renewed, reaching a high point in 1879. Competition with the railroads shrunk the volume of traffic greatly and limited it to cheap, bulky products, even though improvement of these waterways was undertaken. The canals fared even worse. Lack of improvement resulted in abandonment by 1909 of more than half the mileage built. Only the Erie Canal which was deepened in 1903 remained of commercial importance. Shipping on the Great Lakes, however, showed a marked increase. The lakes were favorably situated on important routes of trade and carried mostly heavy freight. The average per bushel rates of transporting wheat from Chicago to New York City in 1910 were 5.1 cents by lake and canal, 6.6 cents by lake and rail, and 9.6 cents by all rail.[16]

Shortly after 1900 successful experiments were made in applying the internal-combustion engine to transportation. The Model T Ford car appeared in 1909. Rapid progress was made in the development of both passenger cars and trucks, both of which were soon to provide a new and important source of transportation.

Crop and Livestock Production

From 1860 to 1914 crop and livestock production made marked changes in three directions: great expansion, shifts in geographical location, and efforts to control loss and improve quality.

Crops. The combined influence of rapid land settlement, increasing use of machinery, and extension and improvement of transportation facilities resulted in an unprecedented increase in crop production. From the end of the Civil War to 1885, the harvested acreages of corn, wheat, oats, barley, and tame hay doubled; by 1910 acreage of corn and wheat had trebled, oats had expanded to four times and barley to six times. The acreage of rye had doubled. Data on production of these crops show their relative volume and the increase for each (Table 5). Production of cotton and tobacco was so badly disrupted by the Civil War that the prewar figures were not again reached until 1879. From then until 1914, cotton production increased three times and that of tobacco more than twice. Potatoes, a food crop, increased three times during the entire period, and flax, a new crop, expanded production rapidly until 1900 (Table 6).

The settlement of lands farther to the west and under different physical conditions resulted in a period of trial and error as to what crops were adapted. The introduction of new varieties helped to solve the problem

[16] *Ibid.*, p. 538.

of adaptation. Competition of products from different areas gradually forced a major reliance in each area upon those crops adapted to the conditions and which could be marketed to the best advantage. By the end of this period these adjustments had resulted in a considerable amount of regional specialization.

TABLE 5. PRODUCTION OF GRAIN CROPS, UNITED STATES, 1860–1914*
(In Millions of Bushels)

Year	Corn	Wheat	Oats	Barley	Rye
1860	838.8	173.1	172.6	15.8	21.1
1870	760.9	287.7	282.1	29.8	16.9
1880	1,754.6	459.5	407.9	44.0	19.8
1890	2,122.3	468.4	809.3	78.3	28.4
1900	2,666.3	658.5	943.4	119.6	25.6
1910	2,552.2	683.4	1,007.1	173.3	29.5
1914	2,523.7	897.4	1,066.3	177.7	42.1

* Source: Census data 1860–1910, from U.S. Department of Agriculture *Yearbook*, 1942 and 1920. Crop estimates data for 1914, from 1942 *Yearbook*.

TABLE 6. PRODUCTION OF SELECTED CROPS, UNITED STATES, 1860–1914*

Year	Cotton (thousands of bales)	Tobacco (millions of lb.)	Potatoes (millions of bu.)	Flax (millions of bu.)	Tame hay (millions of tons)
1860	3,841	434.2	111.1	0.6	19.1
1870	3,012	262.7	143.3	1.7	27.3
1880	5,755	472.7	169.5	7.1	35.1
1890	7,473	488.3	217.5	10.2	66.8
1900	9,535	868.1	273.3	20.0	53.8
1910	10,649	1,055.8	389.2	19.5	68.8
1914	16,112	1,036.7	368.2	13.7	65.8

* Source: Census data 1860–1910, from U.S. Department of Agriculture *Yearbook*, 1942 and 1920. Crop estimates data for 1914, from 1942 *Yearbook*.

Space will permit mention of only the general trends of major crops from the beginning to the end of the period. Just before the Civil War wheat was grown most extensively in a belt from New York and Pennsylvania on the east to Wisconsin and Illinois on the west. Wheat is a pioneer crop, will grow in areas of limited rainfall, and because of its value will stand the cost of long shipment. During the period wheat production was increased in the earlier areas, but the center moved westward to the Great Plains, spring wheat being grown in the Northern states, and winter wheat farther south, centering in Kansas. A third area de-

veloped in the Far West where the crop was grown under dry-farming methods. These areas of heaviest production constituted the Wheat Belt.

Corn acreage was greatest in 1860 from Ohio west to Illinois and in southern Iowa and northern Missouri. The eastern part of the area doubled its production while expansion carried westward. Production in Iowa increased seven times. By 1880 the intensive Corn Belt was well defined as a rough triangle extending from southeastern Ohio to southeastern South Dakota, south to the Nebraska-Kansas line, and east to the starting point.

Oats, which had been rather widespread east of the Mississippi River and north of the Ohio, moved westward to the 100th meridian, thence northward to the Canadian border. Oats is a feed rather than a cash crop and does best in a cool, moist climate. It was nowhere a major crop but came to be widely distributed in the Wheat Belt and Corn Belt with heaviest concentration in Iowa, Illinois, Minnesota, and Wisconsin.

Native grasses furnished much of the hay during the period of settlement. As more of the land was cultivated and rotations established tame hays were used more widely. As a feed crop tame-hay production was widespread over the upper Mississippi Valley, the Lake region, and eastward to the Altantic Coast.

Rye, a minor crop, is often a substitute for wheat but is somewhat hardier. Its production shift was from Pennsylvania, New York, New Jersey, and Kentucky as chief producers to the northern fringe of the primary Wheat Belt. Flax, a pioneer crop of minor importance, centered in New York and Ohio in 1860. Its growing area moved westward and northward and by 1909 coincided with the spring-wheat area.

Potatoes were widely grown over the northeastern quarter of the country in 1860, with heaviest production in New York and New England. Production was largely for local consumption. During this period production expanded at about the same rate as population. Because potatoes grow best in a cool, moist area, expansion in production was mainly west and north, and commercial production became important in limited areas. On the East coast production of early potatoes developed, with main crop areas in Maine, western New York, Michigan, Wisconsin, and Minnesota.

By 1860 the area of the Cotton Belt had been defined. Later adjustment carried cotton production farther west in Texas and into Oklahoma. The disruption of production, of the plantation system, and of the labor force by the Civil War brought about a period of drastic readjustment, particularly in the intensive cotton areas. As production was renewed under a system of cropper tenancy and on small farms, lack of capital, high interest rates, and low prices for cotton retarded recovery. Some westward extension of area, more use of fertilizer in older producing areas, and an

average annual Dec. 1 farm value of the cotton crop of 537 million dollars for the decade 1900 to 1909, as compared with an average of 270 million dollars through the eighties and nineties, served to restore the financial position of the Cotton Belt.

Tobacco, which was grown mostly in the Border states, was also affected by the Civil War, but to a lesser extent than cotton. The states producing tobacco did not change greatly. Of the six highest producing states in 1860, Virginia, Kentucky, Tennessee, Maryland, North Carolina, and Ohio, five were still in the same category in 1914. The emphasis, however, had changed, the leadership passing from Virginia to Kentucky. Tobacco is a cash crop with high labor requirements. The acreage per farm is limited, and it is usually grown in a system of general farming. Because of the commercial importance of tobacco and the way it is grown, the area is often designated as a Tobacco and General Farming area. This area extends from east to west south of the Ohio River and east of the Mississippi River.

During the period new crops were coming into commercial importance. Among these were citrus fruits in Florida and California; other tree fruits in the Pacific, Lake, and Middle Atlantic states; grain sorghums in the southern Great Plains; peanuts in the South; and vegetables in New England and along the Atlantic Coast.

Livestock. Changes in livestock numbers helped to shape the agriculture of the period. The numbers of cattle and sheep doubled, hogs increased 50 per cent, and horses and mules threefold (Table 7).

Even more striking than the increase in numbers of livestock were their geographical shifts. By 1860 cattle were found in all the settled areas; they were most numerous north of the Ohio River and in Texas and California but had not reached the Great Plains. Texas had become a great breeding area. The range-cattle industry on the Great Plains developed from 1870 to 1885. Great numbers of cattle, 600,000 in 1871,[17] were moved from Texas over the cattle trails to the northern grazing areas from which they were shipped by rail either to the Corn Belt for finishing or direct to market. The Corn Belt thus became a great grain-feeding area for western cattle. By 1900 nearly all the western territory was stocked to capacity. After 1894 the changes were chiefly in quality and production.

In the Northeastern states dairy cattle replaced beef cattle after 1880. The emphasis was upon production of fluid milk to supply the growing industrial centers. Farther west, in the northern Corn Belt and Lake states, another dairy area was developing with emphasis on butter. From 1891 to 1895 the three Middle Western butter markets of Chicago, Milwaukee,

[17] The Western Range, p. 121. Senate Document 199, 1936.

and St. Louis received an average of 163 million pounds of butter annually. By 1914 receipts at these markets were 345 million pounds. Fluid-milk production was growing also as cities developed. Thus was established the dairy region from the Lake states east, north of the main Corn Belt.

TABLE 7. NUMBERS OF LIVESTOCK, UNITED STATES, 1860–1914*
(In Millions)

Year	Cattle	Hogs	Sheep	Horses	Mules
1860	25.6	33.5	22.5	7.4	
1870	25.5	26.8	40.9	8.2	1.2
1880	33.3	34.0	40.8	11.2	1.7
1890	52.8	51.6	44.3	14.2	2.3
1900	59.7	51.1	48.1	17.9	3.1
1910	59.0	48.1	50.2	20.0	4.2
1914	59.5	52.8	43.1	21.3	4.9

* Source: Census data, 1860. Livestock estimates for other years, from U.S. Department of Agriculture *Yearbook*, 1942 and 1920.

Hog production has followed closely the heavy areas of corn growing. In 1860 Indiana was the leading state in numbers of hogs with Illinois, Missouri, Tennessee, Kentucky, and Ohio close behind in the order given. Following the Civil War expansion was rapid in the upper Mississippi Valley, then pushed into the western part of the Corn belt. After 1890 production increased in the butter-producing dairy region north of the Corn Belt. Meantime hogs declined in numbers in the East. Thus the feeding of hogs and beef cattle furnished the Corn Belt an outlet for its major crop, corn, a minor part of which was marketed commercially.

Sheep production in 1860 was heaviest in Ohio and New York with rather wide distribution east of the Mississippi with areas developing in the Southwest and Far West. Numbers in the Eastern states declined, while those in the West and Southwest expanded until 1884. After that date competition with cattle, overcrowding of the range, and the advancement of settlement restricted the sheep population. Feeding areas for sheep and lambs developed in the Corn Belt. By the end of the period three systems had evolved: small flocks on farms east of the Great Plains; large bands on extensive range in the Great Plains areas; and fattening in irrigated areas and in the Corn Belt. In the Great Plains and Mountain regions with extensive pasture areas livestock predominated, with meat animals and wool as the primary products.

Throughout this period horses and mules were the major source of farm power. Numbers followed closely the expansion of harvested crop

acreages. The increasing use of machinery called for additional power. Mules were most numerous in the Southern states. Feed to maintain horses and mules and to produce replacements by 1914 required the production of 76 million acres for those on farms and 14 million acres more for those used for other purposes.[18]

Chickens made up the major part of poultry production. By 1860 production for meat had developed near cities. Eggs from the Middle West were shipped in barrels to the East, packed in cut straw. Three major producing areas gradually developed: an extensive section in the Mississippi Valley where surplus products came mainly from grain and livestock farms; the Northeastern states with many large and specialized poultry farms; and the Pacific Coast states with extensive development of commercial production.

Control of Losses and Improvement of Quality. As commercial farming developed added attention was given to a third type of change, that of reducing losses and improving quality. These two objectives were closely related and were worked out in several directions. Among these changes may be noted improvements in the breeding of livestock as illustrated by the replacement of the Texas longhorn by beef breeds and the growth of the purebred livestock industry. Similarly, crops were improved through the introduction of better adapted strains. Insect damage was becoming serious on fruits and vegetables and the boll weevil on cotton. A beginning of control measures introduced spraying of fruits. Control measures for livestock losses were applied to scabies in sheep, the tick on southern cattle after 1906, and the use of protective serum and virus in 1913 for hog cholera. The use of improved equipment, such as the refrigerator car and the cream separator, made for better quality of products. More attention was given to the restoration of depleted soils. The adjustment of agricultural production to market demands had begun.

Throughout the half century from 1860 to 1914, agricultural production expanded both geographically and intensively. Through repeated adjustments each part of the country developed its major line of production, which in most cases was supplemented by several minor products. Thus developed numerous types of farming, each seeking to use to advantage its natural and economic conditions. Methods of production were improved particularly after the work of the agricultural experiment stations began to bear fruit.

Growth of Population and Markets

Markets for farm products were greatly enlarged as a result of the rapid growth of population, its concentration in industrial centers, the transfer

[18] Cooper *et al.*, *op. cit.*, p. 24.

of agricultural processing to factories, the westward shift of receiving markets and processing centers, and changes in marketing organization. The total population increased more than three times from 1860 to 1910, while the farm population doubled (Table 8). Immigration had a marked influence on this increase. In the decade 1861 to 1870, 2.3 million immigrants were admitted; succeeding decades brought 2.8 million, 5.2 million, 3.7 million, and 8.8 million in the decade 1901 to 1910—a total of 22.8 million in 50 years.[19] While all did not remain, they added materially to the population and working force. The growth of nonagricultural population provided a market for food and fiber products.

TABLE 8. POPULATION GROWTH, TOTAL AND AGRICULTURAL, UNITED STATES, 1860–1910*

Year	Population (thousands)	Farm population (thousands)	Per cent of gainfully employed persons in agriculture	Number of states
1860	31,433	15,141	..	33
1870	38,558	18,373	..	37
1880	50,156	22,981	62	38
1890	62,948	26,379	59	44
1900	75,995	29,414	54	45
1910	91,972	32,077	50	48

* A Chronology of American Agriculture, 1790–1940.

Population	1890	1900	1910
50,000–100,000	30	40	59
100,000–250,000	14	22	31
250,000–500,000	9	9	11
Over 500,000	3	6	8

The great industrial development of the period led to the growth of cities. In 1860 the country had 141 cities with a population of 8,000 or more.[20] Both the number of cities and their populations increased. By 1890 more than 160 cities exceeded 10,000. The growth of larger cities during the latter years of the period was as shown in the accompanying table.[21]

The transfer of manufacturing from the home to the factory was well under way in 1860. Farm cheese making, however, was at its height but

[19] Statistical Abstract of the United States, 1947, p. 106.

[20] Bogart and Kemmerer, *op. cit.*, 1947, p. 368.

[21] Statistical Abstract of the United States, 1947, pp. 11–13.

by the end of the century had largely gone to the factories. Butter production on the farm remained longer; 518 million pounds were reported in 1899. Twenty years later this amount was reduced nearly one-half.[22] The shift of processing to the factories provided a better and more uniform product and left the farm family free to devote their efforts to producing and marketing the raw products. It represented another step in the commercialization of agriculture.

As agricultural production moved westward, new market centers arose. This shift of receiving centers was aided by a freight-rate structure which favored shipment of finished products; and for perishable goods the shift was aided by the refrigerator car. Thus the center of flour milling shifted from Rochester, N.Y., to Chicago, thence to Minneapolis. Chicago remained the greatest grain trading center. Other markets important in the grain trade were St. Louis, Duluth, Milwaukee, and Toledo. The building of western railroads made Chicago the center of the slaughtering and meat-packing industry. Other important centers developed at East St. Louis, Omaha, Kansas City, and Indianapolis, all located adjacent to areas of heavy hog or cattle production or feeding. Sheep were also handled through these markets, but wool, a nonperishable product of high value, was shipped east to mills in New England, Pennsylvania, and New York. The markets for dairy products depended upon their form. Fluid milk went to nearby cities, but butter markets in order of receipts were Chicago, Boston, St. Louis, San Francisco, and Milwaukee. In egg marketing, Chicago, St. Louis, and Cincinnati led in the Middle West, New York and Boston in the East, and San Francisco in the Pacific area. For tobacco Louisville became the leading market center. New Orleans was long the major outlet for cotton until surpassed by Galveston. In the eastern Cotton Belt, Savannah, Norfolk, and Charleston were the chief shipping centers.

Except for cotton, the major part of this greatly increased commercial production was used within this country. Cotton exports were resumed after the Civil War and averaged nearly 2 million bales annually from 1866 to 1875. Exports mounted steadily each decade to an average of 9.3 million bales from 1911 to 1915, when exports represented 69 per cent of the crop.[23] Tobacco exports followed a similar trend, increasing from an annual average of 140 million pounds in 1862 to 1866 to 334 million for 1907 to 1911. In the latter period exports were 38 per cent of production.[24]

For food products domestic consumption took a large part and less was exported. Wheat was the chief grain export. Shipments abroad, both as

[22] C. W. Larson *et al.*, The Dairy Industry. U.S. Department of Agriculture *Yearbook*, 1922, p. 312.

[23] Statistical Abstract of the United States, 1947, p. 669. U.S. Department of Agriculture *Yearbook*, 1920, p. 816.

[24] Statistical Abstract of the United States, 1947, p. 672.

grain and flour, mounted from 29 million bushels annually, 1862 to 1866, to 197 million, 1897 to 1901, then declined to 116 million, 1907 to 1911. At the high point 35 per cent of the crop went into export, but at the end of the period this proportion had dropped to 15 per cent.[25] Exports of corn were never important. For 5 years in the late nineties they accounted for 8 to 10 per cent of the crop, but in most years, for less than 3 per cent.[26]

Exports of pork and lard reflected the expansion of corn production. Exports of pork increased sharply from 1869 to the end of the century, then declined to the end of the period. Lard exports followed a similar upward trend until 1909, then dropped somewhat. The two products together represented a little more than 12 per cent of hog production in the latter years of the period.[27]

Exports of other grains represented less than 5 per cent of annual production. Production of wool and sugar was inadequate for domestic needs. The dollar values of all agricultural exports increased sharply during the period, but their proportion of all United States exports dropped.[28]

Period	Annual value (millions)	Per cent of all exports
1855–1860	$229	82.4
1875–1880	526	78.8
1895–1900	752	66.4
1905–1910	963	54.9

These figures emphasize further the rapid industrialization of the country and the growing domination of industry over agriculture.

This growth of industry was in part built upon agricultural raw materials. Of the 11 leading industries in 1860, based upon value of their products, seven used raw materials of farm origin, and the value of their finished products was 73 per cent of the total for the 11 industries. In 1900, six of the 11 leading industries used farm products, the value of which in finished form equaled that of the five nonagricultural industries. In 1914, five of the 11 leading industries used farm products, the finished value of which slightly exceeded that of the other six. These five industries in 1914 were slaughtering and meat packing, flour and grist-mill products, cotton goods, boots and shoes, and bread and bakery products.[29]

[25] C. R. Ball *et al.*, Wheat Production and Marketing, U.S. Department of Agriculture *Yearbook*, 1921, p. 154.

[26] *Ibid.*, p. 204.

[27] E. Z. Russell *et al.*, Hog Production and Marketing, U.S. Department of Agriculture *Yearbook*, 1922, p. 248.

[28] A Chronology of American Agriculture, 1790–1940.

[29] Bogart and Kemmerer, *op. cit.*, 1942, p. 531.

While the expansion of domestic markets absorbed a large part of the greatly increased production, and foreign markets took the surpluses, the prices received by producers were not satisfactory. The Civil War had caused a rapid and sharp price increase which stimulated production. Obviously the more farm production shifted to a commercial basis, the more important were the prices of products sold. From the peak of war prices in 1864 the general price level fell with only slight interruptions until 1893, at which time prices were only one-third of those at the peak. The general price level is a weighted average of a large number of products, both industrial and agricultural. During this period of price decline depressions occurred in 1865–1866, 1873–1879, 1884–1886, and 1893–1897.

Prices of farm products fared even worse. Expansion in production was too rapid for normal absorption; hence for considerable periods in the seventies, the eighties, and the nineties, farm-product prices were forced even lower than the falling general price level. These situations led to widespread discontent among farmers. This discontent was expressed in the Granger movement of the seventies and in farmer support of the Greenback movement of the eighties and of the Free Silver movement of the nineties. From the mid-nineties to 1914 the general price level rose, and the disparity of farm prices narrowed, relieving the cause of discontent.

Another result of the growing commercialization of agriculture was the development of markets on a national basis. This was made possible through the organization of facilities for wholesale marketing. The Chicago Board of Trade had been established in 1848, the New York Produce Exchange in 1850, and the Merchants' Exchange of St. Louis in 1854. In 1870 and 1871 cotton exchanges were formed in Liverpool and London and in 1872 in St. Louis. Wholesale markets developed in the leading market centers, storage facilities were provided, and grading systems were established as a basis for buying and selling. Future trading was established on the produce exchanges.

The net effect of the great expansion of production and resulting price situation went beyond the discontent of producers. It furnished vast supplies of raw materials at low cost to city populations and to factories for processing. The exported surpluses, moreover, resulted in ruinous prices and falling land values in those importing countries which had no protective tariff barriers.[30]

Farmers' Organizations

Following the Civil War agricultural societies, such as had developed earlier on a local basis, were organized in great numbers and on a broader scope. These societies provided the means of expressing protest against

[30] Everett E. Edwards, American Agriculture—The First 300 Years, p. 240.

the unfavorable economic conditions. The decline in prices of farm products has been noted; its causes were not understood. Complaints were of many kinds. Farmers were in debt; loans were hard to get and interest rates high; taxes were heavy. Farmers bought machinery and other supplies in a highly protected market and sold their products in a free world market. They suspected the fairness of grading practices used by elevators and speculators; they distrusted the speculative practices on the produce exchanges as affecting their prices. They saw the growth of big industries that processed their products and manufactured their machinery. They were aware of high and discriminatory rates and other abuses by the railroads. Surely, they reasoned, their hardships must be the result of exploitation by business interests.

Regional groups of societies held conventions in the early seventies, but failed to unite in a common program. In 1867, the Patrons of Husbandry or the Grange, as it was popularly known, was organized in Washington, D.C. Its aim was to improve the economic and social conditions of agriculture. The movement spread rapidly, and by 1875, 858,050 members were reported.[31] Its efforts to redress the wrongs through cooperative efforts took several directions. Marketing of crops and livestock was undertaken; stores were established to handle merchandise, banks to provide credit to farmers at low rates of interest, factories to manufacture machinery, and processing plants to utilize dairy products, linseed oil, and cotton, and to pack pork.[32] Most of these enterprises failed because of lack of capital, experience, and ability of the Grangers to work together and because of outside competition. The Grange also militated against abuses by railroads and in several states secured measures for legislative control. After 1875, the organization declined rapidly in membership but continued cooperative activity in more restricted lines. From the low point in membership in 1889 of about 100,000, a rather steady increase took place, until by 1914 more than 500,000 members were reported.[33]

In the eighties the Farmers' Alliance, composed of one group in the Northwestern states and another in the South, undertook cooperative action, mainly in marketing farm products and purchasing supplies. For several years these efforts proved successful, but that to provide credit failed. Emphasis upon political action at the national level proved to be the undoing of the organization.

In 1902, two groups were organized, the American Society of Equity and the Farmers' Union. The first attempted through organization and

[31] David Edgar Lindstrom, American Farmers' and Rural Organizations, p. 90.

[32] Edwards, *op. cit.*, p. 244.

[33] Lindstrom, *op. cit.*, p. 165.

cooperative action to gain control of the marketing of farm products. Other objectives were added later. The Farmers' Union spread first in the South and later into the Northwest and Middle West. Its activities were directed toward the marketing of farm products, purchase of supplies, and agitation for regulatory laws of various kinds.[34] Membership growth was rapid and numbered nearly 400,000 by 1914.[35]

During this period farmers' organizations were many, their activities diverse, and for the most part short-lived and sporadic. Their greatest weaknesses arose from lack of a sound organizational structure and attempts to develop widely diverse activities too rapidly without a sound business basis. Nevertheless they showed the advantages of organized action and through trial and error laid the groundwork for cooperative enterprise in agriculture.

Agricultural Education

The year 1862 was a significant one for agriculture. In addition to the Homestead Act providing free land, that year also saw the passage of the Morrill Act providing Federal support for agricultural colleges and the act creating the U.S. Department of Agriculture.

Agricultural Colleges under the Morrill Act. By 1860 several states had established colleges of agriculture. For several years there had been agitation for Federal support of agricultural colleges. In 1862 under the Morrill Act Congress approved land grants to provide an endowment for the establishment in each state of "at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts."[36] Further acts in 1890 and 1907 provided additonal Federal support to these "land-grant" institutions. By 1893 colleges had been established in all the states and territories.[37]

Progress was slow during the early years. Income from land grants was disappointing; politics often influenced the organization and administration of colleges; state support was erratic; there was a dearth of qualified instructors and of text materials; the type of curriculum was unsettled.[38] and the number of students enrolled was small.[39] Emphasis was placed

[34] *Ibid.*, pp. 120–122.

[35] *Ibid.*, p. 208.

[36] Legislation Affecting Land-Grant Colleges, U.S. Department of Agriculture, p. 2. Miscellaneous Publication 384, 1939.

[37] Hibbard, *op. cit.*, pp. 335–337.

[38] Edwards, *op. cit.*, p. 254.

[39] Alfred Charles True, A History of Agricultural Education in the United States, 1785–1925, pp. 149, 220, 240–275.

upon farm practices, often including manual work of the students. To provide teaching materials and to answer questions of farmers, experimental work was quite generally undertaken by the staff. From these efforts the experiment stations were later developed. Extension teaching was inaugurated as early as 1892 to carry information on improved methods to those outside the institutions. Encouragement was given to agricultural education in schools below the college level.

By about 1900 the agricultural colleges came into their own. Improvement in the economic situation of agriculture strengthened their position, and the results from experimental work were providing a strong basis of subject matter. More adequate support, staff, and equipment; a greater degree of specialization; more students; and a rising general interest combined to provide a rapid increase in growth and influence. By 1914 many lines of departmental specialization were developed, including a beginning in the economic and social phases of agriculture. Through laboratories, libraries, and broadened curriculums a high level of scientific instruction had been developed, and these institutions had at last realized the plans of their early founders.

The U.S. Department of Agriculture. Although the Department of Agriculture was organized in 1862, its work dated from 1839, when Congress appropriated $1,000 to the Patent Office for the "purpose of collecting agricultural statistics, conducting agricultural investigations, and distributing seeds."[40] The last of these objectives became a major activity, although numerous types of investigation were undertaken.

The immediate objectives of the new Department of Agriculture, as outlined by the first Commissioner, were:[41]

> (1) Collect, arrange, and publish useful agricultural information; (2) collect and introduce valuable plants, animals, and seeds; (3) answer the inquiries of farmers, and be guided by them in selecting subject matter for publication; (4) test by experiment the use of agricultural implements and the value of seeds, soils, manures, and animals; (5) undertake the chemical investigations of soils, grains, fruits, vegetables, and manures, publishing the results; (6) promote botany and entomology; and (7) establish a library and a museum.

The work of the Department began with a budget of $64,000. It was primarily a research organization, with its activities developing in many directions. By 1889, when the Department was given Cabinet status, the budget exceeded a million dollars. Plant introductions and adaptations

[40] Edwards, *op. cit.*, p. 247.

[41] T. Swann Harding, Some Landmarks in the History of the Department of Agriculture, p. 36.

were important, especially to the developing western country; among these were the navel orange from Brazil, durum wheat from Russia, and Egyptian cotton.[42] Regulatory work was added to the activities. By 1897 the Department was organized in 14 bureaus and divisions with 2,444 employees. By 1912 the number of employees was 13,858.[43] The major lines of activity up to the end of this period may be grouped under the following broad headings: plant exploration and adaptation, breeding better plants and animals, battles against livestock diseases, application of chemistry to agriculture, insect control, control and care of national forests, cooperation with the state agricultural experiment stations, administration of pure food laws, maintaining the weather services, supplying economic information, and the beginnings of agricultural marketing work.[44]

Agricultural Experiment Stations under the Hatch Act. In 1887 Congress passed the Hatch Act providing for Federal support of state agricultural experiment stations. The beginnings of agricultural research developed in the colleges as a supplement to teaching and related largely to studying the chemical composition of fertilizers.[45] Growing out of this work and prior to 1875 work had been undertaken in 14 states toward the establishment of institutions for agricultural research. From 1875 to 1888, seven of these states and seven others had passed legislation to establish experiment stations on a state basis without Federal aid, and in 13 other states research work was being carried on without stations being organized.[46] The Hatch Act thus provided Federal support to a wide variety of research already under way. The Act provided also for the Office of Experiment Stations in the Department of Agriculture, which coordinated the work of the Department with that of the states.

During the first few years the work of the stations was diffused among too many small and superficial studies.[47] From state to state much variety prevailed as each emphasized its local problems. By the end of the century a substantial core of tested knowledge had been accumulated, better equipment and more trained personnel became available, and a real science of agriculture was developing.[48] The lines of work involved studies in the

[42] Edwards, *op. cit.*, p. 251.

[43] Alfred Charles True, A History of Agricultural Experimentation and Research in the United States, 1607–1925, p. 190.

[44] Arthur P. Chew, Response of Government to Agriculture.

[45] True, A History of Agricultural Experimentation and Research in the United States, 1607–1925, p. 141.

[46] *Ibid.*, pp. 67–118.

[47] *Ibid.*, p. 136.

[48] *Ibid.*, p. 136.

fields of agronomy, horticulture, forestry, nutrition, animal husbandry, veterinary science, dairying, agricultural technology and agricultural engineering; verification and demonstration experiments; studies of agricultural resources; inspection and control work; and dissemination of information.[49] In addition to published results some extension work was done by those engaged in research.

During this period the agricultural colleges, the Department of Agriculture, and the agricultural experiment stations developed from bare beginnings to substantial organizations. Time was required for their development. Widespread popular appreciation, moreover, did not appear until the tillable free land had been taken up and further expansion of production had to depend on improvements of the existing farm plant. To the end of this period, the major emphasis both in teaching and research was on production—a continuation of the trend of the previous century. The trend remained; its direction shifted slightly from the extensive to the intensive phases of agriculture.

Summary

The period from 1860 to 1914 was initiated by the Civil War which stimulated the agriculture of the North and disrupted that of the South. Distribution of the public domain was accelerated under the Homestead and related acts and the generous land grants, with the attendant extravagant exploitation of timber and mineral resources and the disappearance of arable free land. Improved farm machinery was invented and pressed into use as the tide of settlement moved westward. The railway net was completed providing outlets for commercial farming and shifting the markets for products. Total farm production expanded greatly; through adaptation to natural conditions a pattern of regional specialization arose for major products. Falling prices of farm products resulted from too rapid expansion. Population expanded rapidly with heavy concentration in industrial urban centers, affording large domestic markets and big business consolidation. Exports increased sharply until 1900 after which a better balance appeared. Through organization farmers sought to express their discontent and to better their economic position. Institutions for teaching and research in agriculture were developed, and a scientific basis was established.

From the period were left even greater problems than at the beginning in land use, erosion control, and conservation of resources. New problems appeared of overproduction, need of more adequate credit facilities, and the dominance of industrial interests.

[49] *Ibid.*, pp. 141–164.

QUESTIONS

1. What changes in agriculture resulted from the Civil War?

2. What was the Homestead Act? To what part of the country did it apply? How successful was it?

3. Trace the effects upon agricultural development of (*a*) the land policy; (*b*) the development of farm machinery; (*c*) the changes in transportation methods; (*d*) the development of domestic markets; (*e*) the beginning of farmers' organizations.

4. What agricultural education agencies were provided in this period?

5. What were the objectives and spheres of activity of each?

6. When did the agricultural frontier disappear?

7. What difficulties confronted American agriculture in the seventies, eighties, and nineties?

8. What causes contributed to these difficulties?

9. Explain the farmer's interest in foreign trade during this period.

10. What are agricultural surpluses? When did they begin? What caused them?

11. How account for the more balanced condition of agriculture from 1900 to 1914?

12. The period 1910 to 1914 has been widely used as a base period in agriculture. Was it a good base period? Why or why not?

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Chapter 4. AGRICULTURAL ADJUSTMENTS TO WAR AND PEACE, 1914 TO 1950

Agriculture and Business Activity

The significance of the changes which have affected the agriculture of the United States since 1914 may be more clearly portrayed by relating these changes to a longer time viewpoint reaching back to 1860. The increasing degree of commercialization of agriculture from 1860 to 1914 served to tie the economic conditions of agriculture more and more closely to those of nonagricultural lines which absorbed its products and furnished its industrial supplies. The chart showing business activity and wholesale prices since 1860 graphically portrays the conditions which prevailed in industry (Fig. 3).

The central or normal line on the chart indicates the computed long-time normal rate of business activity corrected for changes in population. The shaded areas above this normal line represent periods in which the rate of activity was greater than usual, or periods of prosperity. Similarly the shaded areas below this line show periods in which business activity was less than usual, or periods of depression.

The intensity of the prosperity or depression periods is indicated by the height of the shaded areas above or below the base line, and their length by the years covered horizontally. Thus business, like agriculture, has not progressed on an even keel but has been subject to frequent and sometimes violent ups and downs. The particular causes of these alternating periods of prosperity and depression need not concern us here.

The line of wholesale prices on the chart is popularly called the "general price level." At the present time this group of wholesale prices includes more than 900 commodities, agricultural and nonagricultural, each weighted in proportion to its value from a national viewpoint. In general, agricultural prices follow the trend of the general price level, although prices of individual farm products or whole groups of products frequently vary from it for limited periods. The general price level as shown on the chart is constructed with the price level of 1929 equal to 100 on the price scale. Three periods are shown in which prices exceeded 160 per

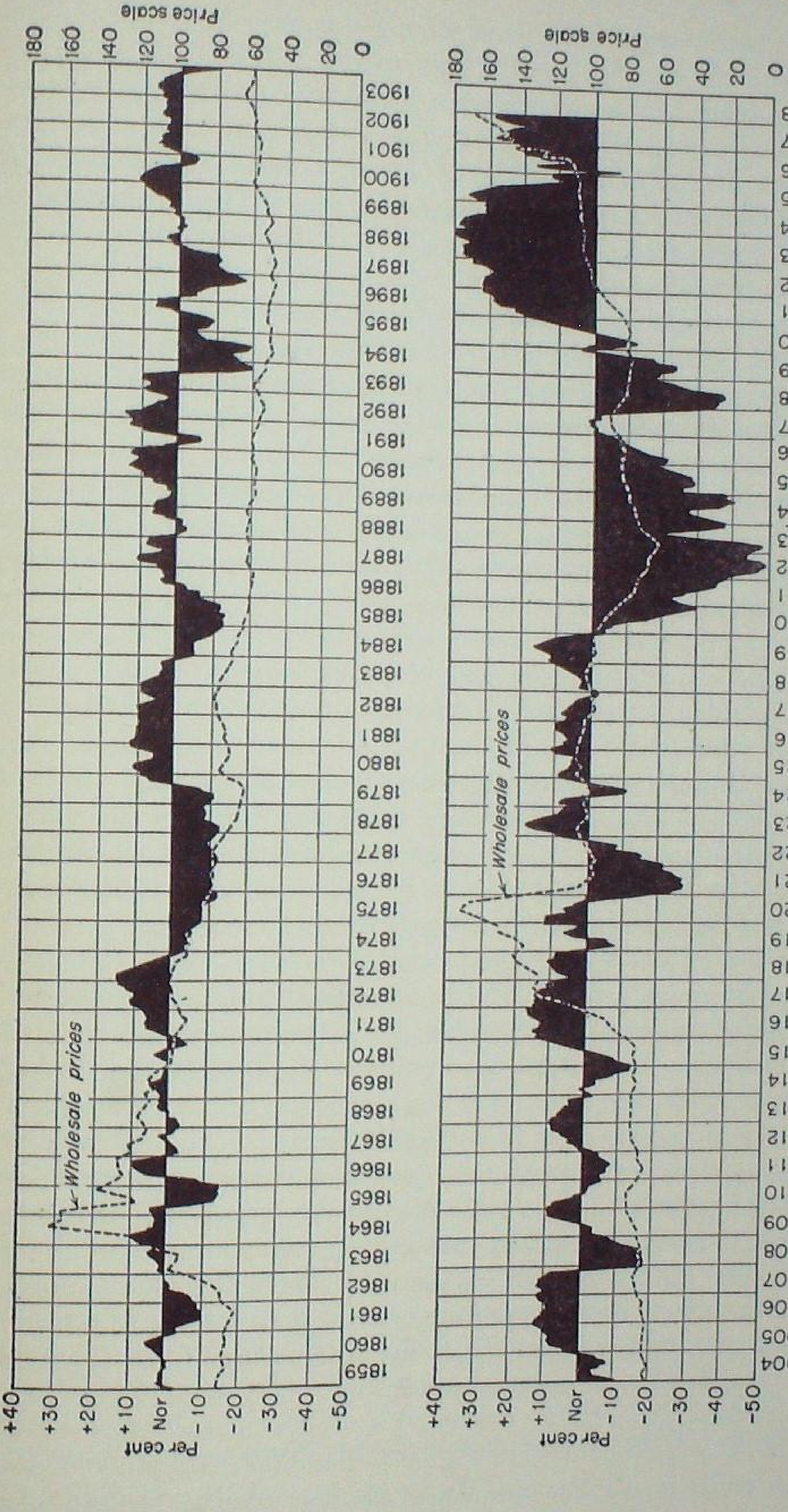

FIG. 3. American business activity since 1860. (*Source: Chart of American business activity since 1790. Copyright by the Cleveland Trust Company and used with their permission.*)

cent of the base average; these were during war periods—the Civil War, World War I, and World War II. Following the Civil War the price level followed an irregular downward trend until 1896, then slowly upward until the sharp rise in World War I. The prosperity periods in business activity have usually been associated with short periods of stable or rising prices, and the depression periods with falling prices. Thus the periods of agricultural distress in the seventies, the eighties, and the nineties coincided with periods of business depression.

Following 1914 the general economic situation affected agriculture even more directly. Farming, already largely commercialized, went through a rapid process of mechanization which made it still more dependent upon industry. The changes in business activity and in the general price level after 1914 took place rapidly and were more violent in character than those before. The rapidity of these changes created difficulties for farmers inasmuch as agricultural production is largely biological and cannot be adjusted rapidly to changing conditions. Thus the short space of 35 years included the stimulation of World War I, the drastic price drop of the twenties, the prolonged and severe depression of the thirties, and the longer and more intensive stimulation of World War II.

The stimulation of a war period upon agriculture is far reaching. Demand for raw materials (farm products) rises rapidly. Production cannot keep pace, and prices rise sharply if not controlled. High prices call forth greater effort, and more machinery and fertilizer are used in an effort to increase production. Meanwhile, because costs of production lag, production is highly profitable. Land values are bid up, many farms change hands, and mortgage debts increase. The farmers' level of living rises.

A depression period reverses the process. Demand shrinks, but production cannot be quickly reduced, and prices fall, reducing farm income. The farmers' purchasing power is lessened and taxes, interest, and debt payments weigh heavily. Mortgages are hard to refinance. Land values decline, and the market dries up. These conditions force a reduction in living levels and in many cases the loss of the farm.

Upon this general background the adjustments of agriculture to war and peace will be portrayed, first by following chronologically the general story of farm production, prices, and income, and efforts to secure and apply remedial action through legislative channels; then by examining separately the effects upon agriculture of changes in farm mechanization, agricultural education and research, farmers' organizations, transportation, land policy, and crop and livestock production.

Farm Production, Prices, Income, and Legislative Efforts

Situation in 1914. From the time of the Civil War to the end of the nineteenth century, American agriculture had undergone a marked expan-

sion. The combined effects of the Federal land policy, the rapid growth of railway transportation, and the application of machine methods to farming had led to a vast increase in cultivated area and a rise in agricultural production which brought about the distress periods in the seventies, eighties, and nineties and made agriculture definitely dependent upon foreign markets. It was this period that Professor Nourse described as "the most stupendous bargain counter in the history of agriculture."[1]

By the end of the century, however, a change was taking place. Within this country, new land, ready for the plow, was nearly gone, and the growth of population, particularly in the cities, furnished an expanding market; abroad, competition for world markets became stronger, and European countries gave greater protection to their own agriculture by means of trade restrictions. American agriculture became more stabilized, and a more balanced relationship developed between agriculture, industry, and international trade. The prices of farm products which prevailed during this period appear low in comparison with those of the subsequent war period, but the prosperity of a period depends not upon the price level alone, but upon the ability of various groups to exchange their products and services freely and equitably. The balance and stability of this period provided a good degree of prosperity for both agriculture and industry.

This balanced condition was particularly marked from 1910 to 1914, so much so that this period has been widely used as a base period for agricultural comparisons. There were hopes that the exploitative practices of the period of commercialization had spent themselves.

Immediate Effects of World War I. This period of balance in American agriculture was disrupted by the outbreak of World War I in August, 1914. Soon a strong demand came from Europe for food supplies, clothing materials, and war materials. Hostilities reduced the crop area, increased the needs, and caused a shortage of manpower. Europe therefore was unable to supply as large a part of her needs as before the war. The heavy demands for shipping facilities and, later, the submarine campaign served to cut off some of the usual sources of supply which were far distant in the Southern Hemisphere and to focus demand upon the United States. These demands from Europe became cumulatively greater year by year as the war progressed. When the United States entered the war on Apr. 6, 1917, the patriotic appeal to supply food and other materials to help win the war became an added incentive. The movement of American troops which began soon after and continued until 3 million men had been moved across the ocean made a further demand upon our agriculture, since they, too, had to be supplied with food and other materials.

The stimulus of rising prices which followed the opening of the war

[1] Edwin G. Nourse, American Agriculture and the European Market, p. 29.

led to increased production. Pasture areas were plowed up and put into grain crops, the expansion reached out into less suitable areas, and emphasis was placed on those kinds of crops and livestock which best fitted the war demand. Established rotations were often upset, and the maintenance of fertility was disregarded. As the war progressed and more men were drawn into the various branches of service or employed in the expanding factories making war materials, more machinery was applied to agriculture and available labor of all sorts was pressed into use to aid in food production. Finally checks were applied to domestic consumption by the inauguration of "meatless" days and "wheatless" days and the use of various substitutes in order to provide the needed exports to feed our own armies and the allied nations.

The expansion of agriculture which took place to meet these demands was very rapid, yet could not keep pace with demand; hence prices mounted continually as a result of shortages and wartime inflation. From the average of the 5-year prewar period, 1910 to 1914, to 1918, the combined acreage of the five principal cereals, wheat, corn, oats, barley, and rye, increased 11 per cent; the numbers of milk cows increased 11 per cent; other cattle increased 13 per cent; hogs, already at a high point, increased 12 per cent; and sheep decreased 15 per cent.

The average prices paid to farmers in the United States rose rapidly, as is shown by the figures for selected products (Table 9).

Under pressure of war demands and high prices, agricultural production was in high gear when hostilities ceased in November, 1918. During the early part of the war period, production had been very profitable because prices rose much more rapidly than costs. As time went on, costs mounted rapidly and left less margin for the producer. The signing of the Armistice, however, slowed down but little the demand for our farm products. Time was required to demobilize the armies and to rehabilitate the agriculture of Europe, and meanwhile food supplies were exhausted. By means of vast loans, aggregating a billion dollars in 1919, and other short-term credit, the United States furnished the means for Europe to continue buying and thus maintained the foreign market for agricultural products.

Because expanded production, high prices, and a good demand continued after the war ended, the idea developed that a new era had arrived in which these changed conditions were permanent. From these influences arose a land boom, during which prices of land rose rapidly, the number of sales increased, and credit purchasing became the rule. Speculation ran rife with fabulous prices of $300 to $500 an acre being paid for farms in the best parts of Iowa and Illinois. For the state of Illinois the average value of land and buildings in 1910 was $108.32 and by 1920 had advanced to $187.59. The boom affected chiefly the best lands. In Champaign

County, Ill., for example, the average value of land and buildings in 1910 was $190.47 an acre and in 1920, $364.56. It is obvious that such values could be maintained only upon the basis of high prices for farm products. The farm mortgage debt for the United States was 3.2 billion dollars in 1910, increased to 5 billion dollars in 1915, and to 8.4 billion dollars in 1920.

TABLE 9. YEARLY AVERAGE PRICES RECEIVED BY FARMERS, UNITED STATES, 1914–1920*

Product	1914	1915	1916	1917	1918	1919	1920
Beans, edible, per 100 lb.	$4.00	$4.88	$9.31	$10.05	$7.30	$7.17	$4.23
Corn per bu.	0.71	0.68	1.17	1.46	1.52	1.51	0.62
Cotton per lb.	0.07	0.11	0.17	0.27	0.29	0.35	0.16
Flaxseed per bu.	1.31	1.68	2.31	3.11	3.58	4.42	2.33
Oats per bu.	0.44	0.38	0.49	0.70	0.68	0.77	0.53
Peanuts per 100 lb.	4.23	4.14	4.84	7.03	6.51	9.30	4.75
Potatoes per bu.	0.56	0.68	1.53	1.26	1.19	1.94	1.25
Rice per bu.	0.92	0.91	0.89	1.90	1.92	2.66	1.18
Wheat per bu.	0.97	0.96	1.43	2.05	2.05	2.16	1.83
Beef cattle per cwt.	6.23	6.00	6.47	8.17	9.44	9.59	8.42
Hogs per cwt.	7.58	6.54	8.38	14.01	16.14	16.36	12.95
Lambs per cwt.	6.34	6.94	8.22	12.31	13.93	12.96	11.85
Butter per lb†	0.26	0.26	0.28	0.35	0.43	0.50	0.54
Eggs per doz.	0.20	0.19	0.22	0.32	0.36	0.41	0.44
Wool per lb.	0.17	0.22	0.26	0.42	0.58	0.50	0.46

* Agricultural Statistics, 1942. Figures rounded to nearest cent.
† Illinois Agricultural Experiment Station Bulletin 351, p. 520.

During this period there were a few farsighted persons who recognized that such an orgy could not last, but their warnings were lost amid the frenzy of high finance. In industry, too, the same sort of feeling prevailed. Wildly speculative schemes were launched. Prices of commodities rose to such levels that buyers' strikes and lawsuits on profiteering appeared.

Collapse of 1920–1921. Agricultural prices began to falter about the middle of 1920, and when the decline was once underway, the fall was precipitous until the bottom was reached about the middle of 1921. United States farm prices of wheat, for example, fell from $2.58 a bushel in June, 1920, to 93 cents at the end of 1921; corn from $1.86 in July, 1920, to 62 cents a year later and to 41 cents in November, 1921; milk cows from $90 per head in August, 1920, to $53 in October, 1921; and hogs from $13.59 a hundredweight to $7.31. Other products suffered similar declines.[2] Again, it was a lack of balance between supply and demand not unlike that of 50 years earlier.

Contributing to this decline were the vastly expanded production, a strong reaction in this country against the high cost of living, the reestab-

[2] U.S. Department of Agriculture *Yearbook*, 1922.

lishment of European agriculture, the credit contraction of our banking system, and particularly the cessation of loans by the United States to Europe when it became apparent that renewals were in order rather than repayment. American agriculture folded back upon itself, deluged with its own abundance, unable to dispose of its surplus, to stem the tide of production, or to support the costly investment it had reared.

A retreat from this position of overabundance was difficult. Crop yields in 1921, 1922, and 1923 were good and served to add to the surplus at a time when low yields would have helped. People who had made investments to start farming in new areas could not abandon their farms without loss. Interest and principal payments on debts contracted during the high-price period forced farmers to maintain their production, since under lower prices more bushels of grain were necessary to pay obligations. Further, many public improvements had been started with high costs which added to the tax burden.

It was evident that agriculture was nearly helpless to apply its own remedy, and demands arose for outside help, chiefly from government. In 1921 and again in 1922 Congress passed tariff acts which imposed duties on many agricultural products. These actions were of little value in the face of domestic surpluses seeking a market. Beginning in 1923 and extending for several years, plans for legislative relief for agriculture were pressed vigorously by farm groups. The earlier measures aimed generally at the restoration of European markets by extension of credit or other means, although at least one plan proposed the "sturdy reliance upon domestic consumption and such incidental foreign outlets as may offer, adjusting our production intelligently to these possibilities."[3] The proposals to open foreign markets prevailed, and in 1927 and again in 1928 Congress passed the McNary-Haugen legislation, but each time the bill was blocked by presidential veto. Finally in 1929 the Agricultural Marketing Act was passed creating the Federal Farm Board.

One reason for the desperate struggle of agriculture for recognition and assistance during these years is found in the fact that the depression of 1920-1921 was short-lived for industry and that the country experienced an industrial boom from 1922 to 1929. In comparison, the farmer, struggling under huge debts and heavy taxes, paid high prices for factory products purchased but, in turn, received relatively lower prices for his products. During this period the value of farm investments was diminishing, and many farmers heavily in debt were losing their farms, and others were forced to apply for farm mortgages or to increase existing ones because current income would not meet operating and fixed expenses.

Meanwhile, the slow and painful process of forced readjustment was

[3] Nourse, *op. cit.*, p. 93.

taking place. From 1918 to 1924 the combined acreage of wheat and rye declined 18 per cent, although the important feed grains, corn, oats, and barley declined only 3 per cent. The number of horses declined 19 per cent, reflecting the substitution of tractor power for horses; cattle numbers declined 10 per cent; sheep, 10 per cent; and hogs increased 6 per cent, a result of farmers' efforts to realize more through feeding than through selling corn at the low market prices. From 1924 to 1932 total production was quite uniform, although variations occurred in different lines of production. With somewhat lowered production, a more active domestic market as a result of the booming industrial situation, and a curtailed but fairly constant export demand, agriculture worked out a readjustment to the new conditions and gradually improved its situation, until by 1928 and 1929 it had regained a considerable part of its prewar purchasing power, although it had by no means recouped the losses of the depression years.

Depression of 1930 to 1933. In the latter half of 1929 it became apparent that the activity and stability of the years just preceding were not solidly supported. In October the stock-market crash precipitated a price decline which continued until the end of 1932. The causes lie in the maladjustments which had developed on an international scale and which affected all nations and urban as well as rural occupations. Only the agricultural phases of the situation will be examined.[4]

The forces primarily responsible for the agricultural depression of 1929–1932 are found outside the agricultural industry. The collapse in the general level of prices during the 1929 and 1930 seasons as a result of the contraction in business and speculative activity here and abroad reduced industrial and consumer demand for farm products. Another sharp reduction in prices during the 1931–1932 season, when financial crises and the breakdown in monetary standards encircled the world, led to even deeper industrial stagnation and distress. The difficulties in which the world finds itself today are related to: (1) the monetary, credit, and trade policies followed during and after the World War; (2) the overexpansion of production and productive capacity in many industries, with an accompanying increase in the volume of indebtedness; (3) the unparalleled orgy of speculation in securities; (4) the trend toward economic self-sufficiency, especially among European nations. This trend resulted in considerable degree from obligations to pay war debts and reparations, and from efforts to escape the effects of falling prices and was manifested in trade barriers and import restrictions that retarded international trade and curtailed the foreign demand for products of this country.

Agricultural production was on a relatively stable basis from 1924 to 1932. Production in other countries, however, had increased after the

[4] Report on the Agricultural Situation, p. 59.

World War, and because of greater foreign competition and the increasing restrictions of trade barriers, foreign outlets took smaller amounts of our domestic production. Stocks of export products, particularly wheat, and later cotton, piled up, and after 1929 this tendency was greatly accentuated. The carry-over of old-crop wheat on July 1 averaged 114 million bushels for the years 1922 through 1928; it then rose as follows: 1929, 232 million; 1930, 294 million; 1931, 327 million; and 1932, 391 million. Average total cotton stocks on hand at the end of the season for the 7-year period 1923 to 1929 were 2.5 million bales; in 1930 this had increased to 4.5 million bales; in 1931, to 6.4 million bales; and in 1932, to 9.7 million bales. The value of total exports of agricultural products from the United States (excluding forest products) was quite stable from 1924 to 1929 and averaged 1,925 million dollars per year. In 1930 the value of exports fell to 1,496 million dollars, in 1931 to 1,038 million dollars, in 1932 to 752 million dollars, and in 1933 to 590 million dollars. While lower prices accounted for some of this shrinkage, the major part was reduction in volume.

The change in domestic demand is well stated in the following quotation:[5]

> Between the summer of 1929 and the summer of 1932, the production of factories and mines shrank 53 percent. The total payrolls of these industries shrank more than 61 percent, and in the fall of 1932 over 10,000,000 people, or more than 25 percent of the working population outside of agriculture, were unemployed. The earnings of those fortunate enough to be retained on payrolls have been reduced through wage reductions and through shorter hours of work. To some extent their lower earnings have been offset by a 20 percent reduction in city living costs, due in considerable measure to the fall in farm prices. The shrinkage of consumers' incomes has been followed by considerable changes in diet; many consumers have shifted to cheaper and bulkier foods, and others have even reduced their consumption of staple foods.

In a depression period, industrial production is quickly curtailed through the closing of factories, and a part of the burden is shifted to the employees. With reduced production, prices are fairly well maintained. In agriculture, production cannot be so quickly curtailed, and but little reduction can be made in labor; hence with reduced demand prices fall, and prices of raw materials suffer most. This situation occurred from 1929 to 1932.[6]

> Wholesale prices of farm products have declined more than retail; and prices received at local farm markets have declined more than prices at

[5] *Ibid.*, p. 59.

[6] *Ibid.*, p. 9.

wholesale markets, thus reflecting the stable and relatively high transportation, processing, and handling charges. Retail prices of food products have declined about 35 percent since 1928, wholesale food prices about 41 percent, and prices received by farmers for food products about 59 percent. Prices of farm crops have in general suffered more than prices of livestock and livestock products. While prices of meat animals and dairy and poultry products declined about 60 percent, grain and cotton, both subject to the combined influence of contraction in domestic and in foreign demand conditions, have declined nearly 70 percent.

To show what this price decline meant in cash income, the following figures give average farm prices received by United States farmers on Jan. 15 in 1930 and in 1933 (Table 10).

Although gross production was not far different, estimated cash receipts from marketings shrank from 11,296 million dollars in 1929 to 4,743 million dollars in 1932.

TABLE 10. AVERAGE PRICES RECEIVED BY FARMERS, UNITED STATES, JAN. 15, 1930, AND JAN. 15, 1933*

Product	1930	1933	Product	1930	1933
Corn per bu.	$0.77	$0.19	Wheat per bu.	$1.08	$0.33
Cotton per 100 lb.	16.79†	10.17	Apples per bu.	1.48	0.65
Flaxseed per bu.	2.80	0.91	Beef cattle per cwt.	8.66	3.28
Oats per bu.	0.43	0.13	Hogs per cwt.	8.80	2.68
Peanuts per 100 lb.	3.70	1.30	Lambs per cwt.	11.10	4.09
Potatoes per bu.	1.37	0.37	Butterfat per lb.	0.37	0.19
Rice per bu.	1.00†	0.42†	Eggs per doz.	0.38	0.21
Soybeans per bu.	1.85	0.45	Wool per lb.	0.27	0.09

* Agricultural Statistics, 1940. Figures rounded to nearest cent.
† Average for previous season.

Declines in the value of farm property were also rapid. Land values had reached their peak in 1920 when for the whole country they were 170 per cent of the 1912 to 1914 period. By 1928 they had fallen to 117 per cent of the base period, and by Mar. 1, 1933, to 73 per cent. This loss in investment value rendered many equities unsafe and served to prolong the period of liquidation. Farmer bankruptcies had been relatively high from 1923 to 1928 as a result of the earlier depression, and losses continued through the second depression. Many farms were lost without going through the formal proceedings of bankruptcy.[7]

While prices of farm products received by producers declined 61 percent during the three years ending in June, 1932, yet prices paid by farmers for

[7] *Ibid.*, p. 13.

goods used in production and in the farm home declined only 29 percent during the same period. The greater decline in prices received than in prices paid has meant a great reduction in the purchasing power or exchange value of unit farm products for the goods farmers usually buy.

The Federal Farm Board, which began its work in July, 1929, was called upon to stem the downward trend in prices. Efforts were made to stabilize the markets for wheat and cotton, important export crops, by buying huge amounts and holding them off the market. This action served to check the fall of prices of these products temporarily, but the long period of declining prices forced later liquidation at still lower prices. The stabilization operations involved 900 million bushels of wheat and 1.3 million bales of cotton and resulted in a loss of 360 million dollars.[8] Price control without ability to control production proved ineffective. A less spectacular but far more valuable contribution by the Federal Farm Board was the expansion and coordination of cooperative marketing, on a national scale. The Federal Farm Board passed out of existence with the change in administration in March, 1933.[9]

The decline in farm prices and in farm incomes and the creation of intolerable gaps between prices and costs have already had far-reaching consequences. The accelerated decline in farm land values has not only reduced or eliminated the farmers' equity, but has undermined the stability of country and city lending institutions and wiped out, restricted, or endangered credit resources. Mounting tax delinquencies have caused large areas of land to revert to counties and states, accelerating the increase in tenancy, and at the same time reducing the income of governmental units. The need for replenishing these incomes militates against needed farm tax relief. Even though all other groups have experienced reduced income, the farmers' share of the national income in 1930 and 1931 has been lower than in any preceding year, and the farmers' rewards for labor, management, and capital have been placed on a still lower plane in relation to the returns of other groups. These inadequate rewards are forcing farmers to a lower standard of living. For an increasing number of farmers, food and shelter are the only reward. Escape from these unremunerative conditions has been shut off by the complete lack of opportunities for employment in other occupations. Furthermore, the rising tide of unemployment has set in motion a movement of city population to farms which, although a form of relief for the industrially employed, aggravates the farm problem, increases potential farm output, and creates an additional strain on farm communities. Some of the maladjustment in prices, production, demand, and international trade developments brought about by this depression may exert retarding influences for some time to come.

[8] Ernest L. Bogart and Donald L. Kemmerer, Economic History of the American People, 1947, p. 620.

[9] Report on the Agricultural Situation, p. 58.

Social Control in Agriculture. From the dark days of the closing months of 1932 and the first two months of 1933, light began to break following the political landslide which placed in power those who were pledged to efforts toward broad social control including assistance to agriculture. The 10 years of struggle for legislative assistance were rewarded in the passage of the Agricultural Adjustment Act in May, 1933.

Agricultural Adjustment Act of 1933. This Act embodied three parts: the first provided for control of agricultural production as a means of raising farm prices. The organization set up to carry out this part was the Agricultural Adjustment Administration, or the AAA, as it came to be popularly denoted. The second provided for credit facilities to relieve the debt crisis in agriculture. The organization set up for this purpose was the Farm Credit Administration. The third was a monetary provision under which the President was authorized to devaluate the currency. This third part was not agricultural in character, although agriculture in common with other industries shared in whatever price improvement followed its use.

The AAA plan was an emergency feature, hastily constructed to deal with a critical situation. Its approach to the problem, however, was significant, in that it attempted to control production rather than to stimulate foreign markets. It moreover embodied a policy of agricultural planning. The general plan was the control of production of specified products by means of contracts between the Secretary of Agriculture and individual producers. The original act named seven "basic" commodities: cotton, wheat, field corn, hogs, rice, tobacco, and dairy products. Others were added in 1934 and 1935. The object was to raise farm prices and to bring the farmer into a position of "parity" or equality with other American producers. A parity price was defined as one which would give the same purchasing power as that product had in the base period, 1910 to 1914. "Benefit payments" were provided for cooperating farmers; the funds for this purpose were to be raised by processing taxes levied on the first processing of the products. Marketing agreements were also provided to improve marketing methods.

To avoid adding to the accumulated surpluses drastic measures were employed: plowing under growing cotton and tobacco in the spring, letting rot a part of the peach crop in California in the summer, and the destruction in the fall of some six million pigs and quarter of a million brood sows. Part of the meat from these hogs went into relief channels. These destructive measures were severely criticized. Throughout its period of activity the AAA purchased huge amounts of many kinds of surplus agricultural products and distributed them to the unemployed through relief channels.

Participation in the programs was generally satisfactory. In their execution a multitude of difficulties arose engendered by the diverse character of our agriculture, the clash of group interests, and the host of details relative to establishment of bases, signing up cooperators, checking compliance, and paying benefits when so large a number of individual producers were involved.

Unfortunately, the results are difficult to allocate to the various causes involved in the recovery. That prices of agricultural products rose is certain. The following figures show for certain products the differences in prices received by United States farmers on Jan. 15, 1933, just before the AAA came into the picture, and on the same date in 1936, when it had just passed from the scene (Table 11).

TABLE 11. AVERAGE PRICES RECEIVED BY FARMERS, UNITED STATES, JAN. 15, 1933, AND JAN. 15, 1936*

Product	1933	1936	Product	1933	1936
Corn per bu	$0.19	$0.54	Wheat per bu	$0.33	$0.92
Cotton per 100 lb	10.17	12.33	Apples per bu	0.65	0.81
Flaxseed per bu	0.91	1.61	Beef cattle per cwt	3.28	6.22
Oats per bu	0.13	0.26	Hogs per cwt	2.68	8.91
Peanuts per 100 lb	1.30	3.00	Lambs per cwt	4.09	8.25
Potatoes per bu	0.37	0.65	Butterfat per lb	0.19	0.34
Rice per bu	0.42†	0.83	Eggs per doz	0.21	0.23
Soybeans per bu	0.45	0.76	Wool per lb	0.09	0.24

* Agricultural Statistics, 1940. Figures rounded to nearest cent.
† Average for previous season.

Many of the above products were not a part of the program; hence the improvement was general. Several influences were jointly responsible. (1) The devaluation of the currency acted as an inflationary influence to raise all prices; (2) the severe and widespread drought of 1934 reduced crop production very materially, and the feed shortage resulted in a rapid and severe liquidation of livestock; (3) during this period the general business situation improved both here and abroad, and this improvement was reflected in agricultural conditions; (4) the easing of agricultural credit relieved the debt pressure and enabled many farmers to farm more sanely; (5) the AAA through production control, marketing agreements, commodity loans, and other features doubtless had a part also in the price improvement. It is obvious that results cannot be allocated definitely in the midst of so many causes. E. G. Nourse gives the following appraisal:[10]

[10] E. G. Nourse, J. D. Davis, and J. D. Black, Three Years of the Agricultural Adjustment Administration, p. 150. Washington: The Brookings Institution, 1937.

Our general conclusion with production control in 1933–35, so far as we can observe it through the dust of the drought, is that the effectiveness of these devices is such as to make them practicable in emergency periods. Should crises of similar magnitude reappear in the future and could constitutional barriers be avoided or removed, such efforts could again be used to advantage for a period of two or three years. The experience does not, however, give support to the belief that similar controls could be made practicable as a means of holding the course of production over the years close to a line laid out in accordance with a continuously operating economic plan.

The plan had several weaknesses. It involved a huge experiment in an untried field. Since it was an emergency measure, its effectiveness could be expected to wane as the emergency passed. This proved to be true, and farmers cooperated less heartily as they became more independent. It tended to freeze the existing pattern of production and to discourage economic adjustments. The parity principle as set up projected a rigid relationship among agricultural products as of the base period. Moreover, the collection of processing taxes was contrary to the economic interests of processor groups, such as millers, packers, and textile manufacturers. This hostility was expressed in injunctions against the collection of processing taxes, and court action led to the decision of the Supreme Court on Jan. 6, 1936, in the Hoosac Mills case against the use of processing taxes to pay benefits under production-control contracts. Some other control measures affecting cotton, tobacco, and potatoes were repealed, although other parts of the program were not affected.

Soil Conservation and Domestic Allotment Act, 1936. Following the action of the Supreme Court, Congress passed the Soil Conservation and Domestic Allotment Act which shifted the emphasis from production control to conservation of soil resources. Agricultural income was to be increased through payments to farmers for diverting land from "soil-depleting" to "soil-conserving" crops and for performing specified practices to aid in conservation. Payments were to be made from the Federal treasury.

The payments to farmers, while substantial, were less than under the Act of 1933. Popular reaction was more favorable to the idea of soil conservation than to production control. The Act was highly ineffective, however, in securing control of production. A severe drought in 1936 effectively curtailed production, but under a favorable season production in 1937 broke existing records.

Agricultural Adjustment Act of 1938. The years of experience with surpluses gradually brought a realization that the problem was chronic. As a result of increased output per man, mechanization, and changes in type and practices in livestock production, our farm production capacity

continued to exceed domestic and foreign demand. The drought years of 1934 and 1936 had drastically cut production and indicated the need for reserves. The Act of 1938 made provision for a many-sided program, the chief lines of which were as follows:

1. Acreage allotments supported by benefit payments.
2. Ever-normal granary for storage of surplus corn, wheat, and cotton with loans to producers at 52 to 75 per cent of parity.
3. Marketing controls for corn, wheat, cotton, tobacco, and rice.
4. Crop insurance for wheat.
5. Authorization of four regional laboratories to develop new uses for farm products.

This program was intended to keep the acreages of major crops within the allotments and goals. In case yields were high, the surpluses could be stored under government loan. If surpluses became unmanageable, marketing quotas would be set up if two-thirds of the producers of a product voted in favor of them. Payments were to be from the treasury.

The ever-normal granary served to provide a reserve against emergencies and a temporary outlet but resulted in heavy storage accumulations of wheat, corn, and cotton, as shown by the following figures (Table 12).

TABLE 12. ANNUAL CARRY-OVER OF WHEAT, CORN, AND COTTON, UNITED STATES, 1937–1944*

Year	Wheat, July 1 (thousands of bu.)	Corn, Oct. 1 (thousands of bu.)	Cotton, Aug. 1 (thousands of bales)
1937	83,167	65,655	4,382
1938	153,107	361,438	11,436
1939	250,015	583,740	12,943
1940	279,720	687,623	10,453
1941	384,916	644,970	12,011
1942	632,103	492,420	10,475
1943	621,659	367,242	10,530
1944	316,675	214,633	10,559

* Agricultural Statistics, 1946. Wheat, p. 17; corn, p. 46; cotton, p. 81.

Wheat stocks include those on farms, in country elevators and mills, in commercial storage, and in merchant mills and elevators. Corn stocks include those on farms, in commercial storage, and government owned stocks at country points.

Stocks of the three crops were exceptionally low in 1937 as a result of the severe drought in 1936. If the advent of the war had not changed the demand picture, difficulties would have resulted from the accumulations from 1938 to 1941. Increased livestock feeding after our entry into

World War II reduced the corn carry-over each year after 1941 but did not materially affect wheat stocks until 1944. Stocks of cotton maintained a high level throughout the period shown. Marketing quotas were invoked for cotton, tobacco, and peanuts. The ever-normal granary feature appeared to have achieved its aim of "permanent abundance."

The problem of surpluses of farm products, however, was not solved on the production side, and various means were devised for disposal of surpluses. Among these measures were the following:

1. The school-lunch program, which in the fiscal year 1940–1941 provided an outlet for 344 million pounds of food distributed to 5 million children through 66,700 schools.
2. The food stamp plan, started in May, 1939, which by the end of June, 1941, was operating in 363 areas and serving 4 million persons.
3. Low-cost milk marketing program by which milk consumption was subsidized for low-income groups in a number of cities.
4. The cotton stamp plan, started in May, 1940, but which was not widely extended and was discontinued after two years.
5. The marketing agreements program under which the government, supported by producers, provided regulations relating to volume, grade, and price of many farm products marketed.

These disposal programs, it will be noted, had two objectives: (1) to provide relief for low-income groups to raise their dietary standards, and (2) to strengthen the market demand for many kinds of farm products.

The situation shortly before our entry into World War II was summarized by Henry A. Wallace upon his retirement as Secretary of Agriculture.[11]

> We have large supplies in the ever-normal granary, while at the same time we have protected the farm income with commodity loans. We have increased soil fertility. If national defense requires it, we are in position to expand agricultural production without plowing up the hillsides or the Great Plains. If foreign markets are still further reduced after the war we are in position to make the necessary adjustments by suitable acreage control and by the stimulation of domestic consumption.

This appraisal by a sponsor of the program was altruistic. The production-control features generally failed in their objectives. Some acreage reduction was obtained, but the effects were largely offset by increased yields because of using the best land for crops under control, greater use of fertilizers, increases in nonbasic crops, and favorable seasons.[12] Measures

[11] Report of Secretary of Agriculture, 1940, p. 184.

[12] John D. Black and Maxine E. Kiefer, Future Food and Agriculture Policy, p. 181.

were more effective for products under marketing controls. Crop loans made by the Commodity Credit Corporation were of the nonrecourse type, *i.e.*, the farmer could turn over the stored crop to the CCC if the loan price exceeded the market price in full payment of his loan, or he could pay off the loan and sell the crop if the market price was more favorable. In effect, this provision guaranteed the loan price.

That this series of programs increased farm income is evident from the record of payments made by the government by program years:[13]

Year	Millions	Year	Millions	Year	Millions
1933	$277	1937	$308	1941	$653
1934	637	1938	568	1942	588
1935	467	1939	709	1943	599
1936	460	1940	639	1944	294

The amounts shown in the accompanying table include both conservation and parity payments but do not include administrative expenses; hence total costs to the Federal treasury were considerably greater. The accumulated surpluses shown, although they proved to be valuable as a reserve for war needs, indicated the failure thus far to devise an effective solution for farm surpluses.

The outbreak of World War II in Europe drastically reduced the foreign demand for American products. War activity closed many ports, and neutrality legislation in this country restricted credit and the use of the merchant marine in supplying goods to belligerents. The domestic defense program, undertaken in 1940, increased industrial activity and strengthened the domestic market for farm products. This change was reflected most quickly in prices of meat animals and dairy products. By August, 1941, the combined index of all farm products had reached a parity position. With our entrance into the war the farm program was directed toward producing those products most needed for the war effort.

Stimulation of World War II. While the United States did not enter the war until after the attack on Pearl Harbor, the economic effects of the war became significant many months earlier. War preparations in the United States began in 1940. Early in 1941 lend-lease legislation opened the way for our supplying to Europe large quantities of food and war materials and providing the transportation for their delivery. This new outlet together with the growing rate of defense preparations greatly increased both industrial and agricultural output. The Selective Service

[13] Agricultural Statistics, 1946, p. 655.

System began operation on Sept. 16, 1940, and by the date of Pearl Harbor had inducted more than 900,000 men. In its results, the year 1941 belongs in the war period.

The declaration of war in December, 1941, added stimulus to the activity already under way. The problem of agricultural surpluses quickly changed to one of shortages. Goals for agricultural production were revised upward in response to the heavy requirements for lend-lease, the mounting demands of the armed forces, and the increasing purchasing power of civilians. Studies were made to ascertain the maximum farm production which could be attained. The emphasis was not simply expansion of production but increase of certain products which were most needed. This new emphasis called for increases in oil-bearing crops, soybeans, flaxseed, and peanuts—to offset the loss of vegetable oils previously imported; corn as a feed crop; meat animals; milk; eggs; poultry; canning peas and tomatoes; and sugar cane and sugar beets. Reductions were called for in wheat, cotton, and tobacco.

Farm supplies of labor, machinery, fencing, fertilizer, insecticides, and container materials felt the pinch. Imports of many products were curtailed; this loss of imports resulted from (1) supply areas falling into enemy hands, as rubber, silk, hard fibers, jute, and drying oils; and (2) lack of available shipping for coffee, tea, and wool. Within the country a shortage of railway cars developed, and truck transportation was limited by a shortage of tires.

In May, 1941, loan rates on basic crops were raised to 85 per cent of parity. Soon supports were added at comparable prices for any other products considered necessary for the war effort. Late in 1942 the Stabilization Act raised supports to 90 per cent of parity, 92½ per cent for cotton, set ceilings for farm products at a minimum of 110 per cent of parity, and provided that supports be continued until two years after the war was officially ended.[14] These actions guaranteed good prices during the war and were intended to prevent a postwar collapse such as occurred after World War I. During the war subsidies were used to increase production of certain products without violating ceilings on consumers' prices. These war measures were part of a general program announced in April, 1942, by the President to prevent inflation. It provided for

1. Heavier taxes.
2. Ceilings on retail prices and on rents on dwellings.
3. Stabilization of wages.
4. Stabilization of farm prices.
5. More buying of war bonds.

[14] Black and Kiefer, *op. cit.*, pp. 179–180.

6. Rationing of essential scarce commodities.

7. Encouragement of debt and mortgage retirement and restrictions on installment buying.

Meanwhile many military camps had been built and filled with men in training. The gigantic industrial capacity of the country was diverted in large measure to the production of war materials. New plants and shipyards were rushed to completion. The drain of manpower into the armed forces and into war industry created everywhere a labor shortage.

Late in 1942 Congress answered the growing fear of a food shortage by passing legislation providing for deferment from military service of essential agricultural workers. Other legislation provided for an emergency farm labor setup under which local labor was recruited and foreign labor was imported for performing special farm jobs which could be handled on a mass basis, such as harvesting fruit and vegetable crops, detasseling hybrid seed corn, etc. Later, large numbers of prisoners of war were used for such work.

TABLE 13. AGRICULTURAL FOOD PRODUCTION FOR SALE AND FARM-HOME CONSUMPTION*
(1935–1939 = 100)*

Year	Production			U.S. population
	All crops	Livestock and livestock products	All groups	
1939	107	107	106	101
1940	107	112	110	102
1941	110	115	113	103
1942	121	127	124	104
1943	114	139	129	106
1944	128	143	137	107
1945	122	141	134	108
1946	135	138	137	109
1947	136	137	136	111
1948†	151	130	138	113

* Statistical Abstract of the United States, 1947, p. 629.
† Agricultural Statistics, 1949, p. 596.

Increases in production were made in all phases of agriculture except cotton and sugar, which declined. The extent of the over-all increase over the prewar period, 1935 to 1939, is shown in Table 13. By 1946 production of poultry, eggs, wheat, fruits, and vegetable crops exceeded prewar by more than 40 per cent.[15] In addition, the victory-garden program was

[15] *Ibid.*, pp. 36–37.

inaugurated and expanded until 18½ million families were participating.[16] This project added materially to the food supply and lessened the pressure on rationed articles.

This remarkable increase in farm production was made in the face of serious shortages of labor, equipment, and fertilizer. It represented long days, utilization of labor of women and children, and exchange of labor between farms. It is true that weather conditions were generally favorable despite serious flood conditions which greatly delayed spring work in some years. The increase in livestock production used up current crop production and the accumulated reserves of corn in the ever-normal granary, and much wheat was utilized as feed. Production drew heavily upon accumulated stores of soil fertility. Much farm work, such as repairs, weed cutting, etc., was neglected in the interest of food production.

Influences contributing to these results in addition to favorable weather were increasing use of machinery and tractor power, greater use of fertilizer and lime, use of improved seeds including hybrid seed corn and new varieties of grains, and the building up of livestock numbers and feed supplies in the years preceding the war.[17]

Demands for food products appeared insatiable. In October, 1943, industrial production was the highest of the war period. The number of civilian workers was 82 per cent above that of 1939, and payrolls had increased 260 per cent. The large labor force, many on an overtime basis, required substantial diets and were able to pay for them; civilian demand therefore was very high and took about 75 per cent of current production.

Members of the armed forces in training or combat require half again as much food as civilians. Reserve supplies of 30 days were necessary in this country, but 9 months' reserve supplies were required for overseas troops. By the end of 1942 the armed forces numbered about 7 million; by the end of 1943, 10.8 million; by the end of 1944, about 12 million. This rapid increase in numbers and in transfer to battle areas required huge amounts of food.

Exports to other nations consisted almost entirely of lend-lease shipments to our allies. Some idea of this movement is afforded by the following figures (Table 14).

Prices of farm products averaged 68 per cent higher in 1944 than in 1935 to 1939. The price system during the war was operated under the war price controls with floors, ceilings, and subsidies—all of which affected the price the farmer received. Prices of products sold increased much

[16] Abridged Chronology of Agriculture's Part in the War, p. 20. U.S. Department of Agriculture, 1947, mimeographed.

[17] Sherman E. Johnson, Changes in American Farming, p. 3. U.S. Department of Agriculture Miscellaneous Publication 707, 1949.

more rapidly than prices paid by farmers. The increase in physical production of more than one-third above the 1935 to 1939 level, coupled with the sharp upward trend in prices, resulted in a marked increase year by year in farm income. These trends continued into the early postwar years.

TABLE 14. MAJOR AGRICULTURAL PRODUCTS EXPORTED UNDER LEND-LEASE, CALENDAR YEARS, 1943 AND 1944*
(In Thousands of Tons)

Product	1943	1944
Meat products	1,264	1,016
Animal oils and fats, edible	461	450
Dairy products	639	696
Fish and fish products	175	63
Other edible animal products	137	144
Grains and preparations	606	405
Vegetables and preparations	432	432
Fruits and preparations	211	233
Vegetable oils and fats	213	198
Sugar and related products	587	268
Tobacco and manufactures	139	58
Cotton, unmanufactured	317	140

* Shipping weight basis. Compiled from Foreign Trade Statistics, 1943 and 1944, U.S. Department of Commerce.

The cessation of hostilities in the European theater in May, 1945, and in the Pacific theater in the following August served only to redirect the trend of farm production. Lend-lease was terminated, but foreign demands for food were maintained through the requirements of the United Nations Relief and Rehabilitation Administration (UNRRA) and of the military government in the occupied countries. Widespread war disruption and unfavorable crop conditions in Europe in 1947 prolonged the dependence of many countries upon the United States for food supplies. Industrial production continued at a high rate in an effort to make up war-induced shortages of civilian goods.

Wartime price controls were removed late in 1946. Annual rounds of price and wage increases followed in 1946, 1947, and 1948. In April, 1948, the European Recovery Program was launched. It affected American agriculture directly by demands for foods and indirectly by demands for industrial products which helped maintain domestic purchasing power. Because of the uncertainty in international affairs, military preparedness again came into the picture, tending to maintain the high rate of industrial production.

Under the continued influences of these inflationary forces prices of farm

products (except fruits) continued to rise, after price controls were removed, until by January, 1948, prices of all crops and livestock averaged more than three times the 1910 to 1914 base (Table 15). The farmers'

TABLE 15. YEARLY AVERAGE PRICES RECEIVED BY FARMERS, UNITED STATES, DURING AND AFTER WORLD WAR II*

Product	1909–1914 av.	1935–1939 av.	1941	1943	1945	1946	1947	1948†
Corn per bu	$0.64	$0.69	$0.75	$1.12	$1.27	$1.56	$2.16	$1.31
Cotton per lb	0.12	0.10	0.17	0.20	0.23	0.33	0.32	0.30
Flaxseed per bu	.....	1.69	1.79	2.83	2.89	4.04	6.15	5.76
Oats per bu	0.40	0.34	0.41	0.72	0.67	0.81	1.05	0.73
Peanuts per 100 lb	4.80	3.60	4.70	7.10	8.30	9.10	10.10	10.05
Potatoes per bu	0.70	0.72	0.81	1.31	1.43	1.24	1.62	1.55
Rice per bu	0.81	0.74	1.36	1.78	1.79	2.25	2.69	2.25
Soybeans per bu	.....	0.95	1.55	1.81	2.08	2.57	3.34	2.27
Wheat per bu	0.88	0.84	0.94	1.36	1.50	1.91	2.29	2.05
Apples per bu	0.96	0.90	0.96	2.39	3.01	2.46	1.79	2.23
Oranges per box	.....	1.17	1.56	2.64	2.93	1.55	1.29	1.75
Beef cattle per cwt	5.21	6.56	8.82	11.90	12.10	14.50	18.50	22.20
Hogs per cwt	7.22	8.38	9.09	13.70	14.00	17.50	24.10	23.10
Lambs per cwt	5.87	7.79	9.58	13.00	13.10	15.60	20.50	22.80
Butterfat per lb	0.26	0.29	0.30	0.44	0.45	0.50	0.78	0.64
Eggs per doz	0.22	0.22	0.24	0.37	0.38	0.38	0.45	0.47
Wool per lb	0.18	0.24	0.36	0.42	0.42	0.42	0.42	0.49

* 1909–1914 average, *Agricultural Situation*, 1939; 1935–1939 average, *Agricultural Situation*, February, 1949; 1941–1946, *Crops and Markets;* 1947–1948, current U.S. Department of Agriculture publications.

† Preliminary, from Agricultural Statistics, 1949.

purchasing power was 22 per cent above the parity level. From this point prices of crops (except tobacco) generally declined, reflecting resistance to high living costs and possible loss of foreign markets. Livestock and livestock products, however, broke sharply, but recovered to an even higher peak in July and August. Price declines in all groups (except tobacco) in the closing months of 1948 reflected the very high crop production of that year. Meanwhile operating costs were rising, and the farmers' advantage was becoming less. Uncertainty appeared in the general situation, and by early 1949 it was evident that the price peak of farm products had passed.

Combined high production and rising prices during the war and postwar period produced rapidly rising farm incomes (Table 16). These higher incomes in turn were translated into higher land prices. Farm real

estate values rose steadily from 1940, until by July, 1948, they had doubled and were 2 per cent above the peak reached in 1920.[18]

While operating expenses doubled during the war period and absorbed a part of the increased receipts, the financial position of agriculture was greatly improved (Fig. 4). Total assets of agriculture in 1940 were 54 billion dollars and liabilities were 10 billion dollars, leaving equities of proprietors of 44 billion dollars. In 1948 assets (at 1948 values) were 122 billion dollars, liabilities 9 billion dollars, and equities 113 billion dollars. If the effects of inflated prices in 1948 are removed by applying 1940 values to the physical assets, the total assets in 1948 were 74 billion dollars and the proprietors' equities 65 billion dollars, a net gain of 21 billion dollars during the 8 years.[19]

TABLE 16. ANNUAL FARM INCOME FROM SALES AND GOVERNMENT PAYMENTS, UNITED STATES, 1940–1944*
(In Millions of Dollars)

Year	Cash receipts from farm marketings			Government payments	Total cash receipts
	Crops	Livestock and products	Total		
1935–1939 av.	$3,427	$4,547	$7,974	$502	$8,476
1940	3,471	4,893	8,364	766	9,130
1941	4,716	6,465	11,181	586	11,767
1942	6,331	9,041	15,372	697	16,069
1943	7,980	11,454	19,434	672	20,106
1944	9,038	11,322	20,360	804	21,164
1945	9,538	11,982	21,520	769	22,289
1946	11,165	13,699	24,864	772	25,636
1947	13,504	16,510	30,014	314	30,328
1948†	13,485	17,060	30,545	257	30,802

* Agricultural Statistics, 1949, p. 627.
† Preliminary.

Agricultural Act of 1948. At the end of December, 1946, the President officially announced the end of the war, thus fixing the termination of the wartime agricultural price supports at the end of 1948. The new Act of 1948 was a compromise under which the existing price-support legislation, with some changes, was extended through 1949. Beginning in 1950, a much-changed support plan was to be provided, but it was

[18] Current Developments in the Farm Real Estate Market, Bureau of Agricultural Economics Release, August, 1948.

[19] The Balance Sheet of Agriculture, pp. 1–3. U.S. Department of Agriculture Miscellaneous Publication 672, 1948.

replaced before it went into effect. The major provisions of the Act of 1948 were the following: (1) Flexible price supports at 60 to 90 per cent of parity were provided for the basic products, wheat, corn, cotton, tobacco, rice, and peanuts, the supports related inversely to the normal supply. (2) Prices of nonbasic commodities could be supported at any level up to 90 per cent of parity as determined by the Secretary of Agriculture. (3) The method of figuring parity was changed. The old relationship as of 1910 to 1914 was retained for the relative price position of farm products sold and products bought by farmers. For each supported product an "adjusted" price base equal to the average price for the preceding 10 years was substituted for the old 1910 to 1914 base. (4) Any

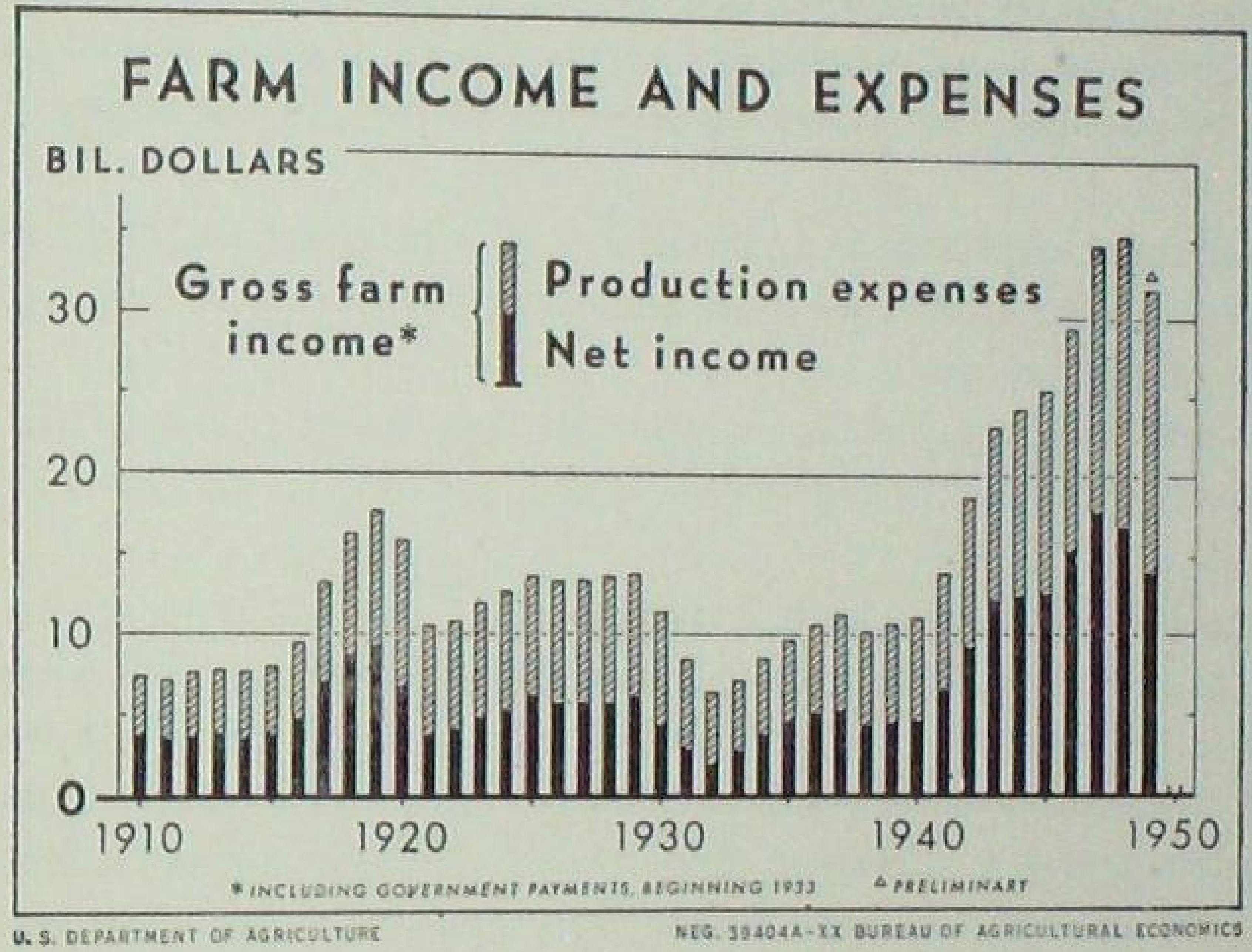

FIG. 4. Agriculture is prosperous during war periods because income increases much more rapidly than expenses. Later income shrinks but expenses remain high.

downward change from the old base to the new one was to be made gradually. (5) Marketing quotas could be used in case of large supplies or a continued low price for a consecutive 3-month period.

The provision for an adjustment between supply and the rate of support was intended to make an automatic correction for large or small supplies. The recent and flexible parity base was an improvement over the previous rigid one. The Act was supported by all the major farm organizations, yet it was strongly opposed by many farmers who, having experienced high supports, were reluctant to accept lower guaranties. As compared with previous acts its provisions were definitely more in the direction of the public interest and less in that of class legislation. Before the Act became operative it was replaced by the Agricultural Act of 1949.

The Agricultural Act of 1949. The Agricultural Act of 1949, which became effective Jan. 1, 1950, contains the following major provisions:

1. It retains the 10-year moving average parity formula of the 1948 act, but amends it to include wages paid hired farm labor and also the wartime subsidy payments to producers under OPA.

2. For four years, 1950 to 1953, the basic commodities are to have the higher parity as calculated under the old or the new formulas, after which the flexible support provisions are to be restored.

3. The new parity formula applies to all nonbasic products that are supported.

4. The price of dairy products is supported within the range of 75 to 90 per cent of parity as determined by the Secretary of Agriculture.

5. The price of wool (including mohair) is supported within the range of 60 to 90 per cent of parity as determined by the Secretary of Agriculture.

6. Mandatory supports are provided for Irish potatoes, tung nuts, and honey within the range of 60 to 90 per cent of parity as determined by the Secretary of Agriculture.

7. For any other nonbasic commodity the Secretary is given discretionary authority to provide supports at levels not to exceed 90 per cent of parity.

The general effect is a higher support level. Of the basic crops the old parity formula gives the higher supports for wheat, corn, cotton, and peanuts, while the new formula favors rice and tobacco. For most nonbasic commodities the new parity formula provides higher supports than the old. For the few products for which the new parity is lower than the old, the reduction is graduated downward, 95 per cent of the old parity in 1950, 90 per cent in 1951, 85 per cent in 1952, and so on to the lower level. The provisions for controls through acreage allotments and marketing quotas are retained.

Other Major Changes in Agriculture

The preceding discussion has followed briefly the drastic shifts that have taken place since 1914 in farm production, demand for these products, prices, incomes, and the governmental aids established in an effort to produce stability in a period of marked instability. Meanwhile many changes have occurred within agriculture, each of which has contributed much to the general picture. Among these changes brief treatment will be given here to the mechanization of agriculture, the expansion of education and research, the growth of farmers' organizations, transportation developments, the redirection of land policy, and changes in crop and livestock production. Aspects of farm credit, cooperative activity, and

taxes will be mentioned in passing, inasmuch as they will be treated more fully in subsequent chapters.

Farm Mechanization. Just as agriculture in the period before the Civil War depended largely upon hand labor, so from the Civil War to World War I it depended largely upon horsepower. The gasoline tractor, introduced shortly after 1900, was being improved, and by 1910 annual production of tractors had reached 4,000. In 1916 more than 29,000 were manufactured, most of which were sold in the domestic market. By 1930, 920,000 farm tractors were in use. During the depression years following 1930, few tractors were added, but by 1935 demand again became strong, surpassing the capacity of manufacturers for the time. Manufacture was restricted during World War II.

Changes in types have been rapid. The first gas tractors were very heavy. Lighter machines were introduced about 1917, and rapid developments were made in the standard or four-wheel type of farm tractor. About 1924 the general-purpose type appeared, which was capable of cultivating row crops. About the same time the power take-off was invented, permitting the transfer of power from the tractor directly to moving parts of machines being operated. Developments in very recent years have included a marked shift to the general-purpose or cultivating type of tractor, the use of high-compression motors, and pneumatic tires, with an increase in speed, power, and efficiency and lower fuel consumption. Small-size tractors, suitable for lighter jobs and for use on small farm units, have made mechanized power more widely available.

Coincident with this increase in use of tractor power has been a reduction in numbers of horses and mules on farms. The peak of horse numbers was in 1919, and of mules in 1925. Displacement of work stock was hastened also by the increase in numbers of farm trucks and automobiles. The extent of these changes is shown in Table 17.

Marked changes were made also in machinery design from the early adaptations of horse-drawn types to the larger and heavier machines suited to the new power units. Later many machines were designed for direct mounting on tractors. Rubber tires were introduced on most kinds of farm equipment for faster and easier operation.

The application of mechanized equipment has differed much by regions. The greatest change occurred in the Great Plains and in the Corn Belt. The combine was introduced into the wheat fields of the Great Plains in 1907 and into the Corn Belt in 1924. In the late twenties corn pickers came into general use in the Corn Belt. These areas had productive soils and a type of agriculture suited to laborsaving equipment. In other areas rapid mechanization has taken place in the better suited parts of the areas and in localities of specialized production. The application of

mechanical methods to cotton and tobacco production has been slow. Cotton pickers have passed the experimental stage, but mechanical picking still presents problems.

Other new machines of many kinds have been invented and are being put into use. Among these are flame cultivators, tractor loaders, corn and hay driers, self-propelled combines, pickup choppers for hay, sugar-beet harvesters, peanut shakers, blowers for insecticides, side-row fertilizer distributors, and multiple-operation machines which replace several single operations.

TABLE 17. NUMBER OF HORSES AND MULES, TRACTORS, MOTOR TRUCKS, AND AUTOMOBILES ON FARMS, UNITED STATES, JAN. 1, 1910, TO JAN. 1, 1949*
(In Thousands)

Year	Horses and mules	Tractors	Motor trucks	Automobiles
1910	24,211	1	0	50
1920	25,742	246	139	2,146
1930	19,124	920	900	4,135
1940	14,478	1,545	1,047	4,144
1945	11,950	2,425	1,460	4,152
1947	10,021	2,800	1,730	4,520
1948†	9,130	3,150	1,920	4,930
1949†	8,274	3,500	2,100	5,300

* Martin R. Cooper *et al.*, Progress of Farm Mechanization, pp. 32 and 85; and Sherman E. Johnson, Changes in American Farming, p. 17.

† 1948 and 1949 from Agricultural Statistics, 1949, pp. 405, 571. (1949 preliminary.)

Mechanization has been a major influence in the increase in agricultural production since 1914. With an increase of 26 per cent in the volume of farm power, machinery, and equipment and a decrease of 17 per cent in farm employment, total farm output has been increased 60 per cent.[20] The heavy physical effort in farming has been greatly reduced, while the faster rate of work and higher quality of operation have greatly raised the output per worker. As a result, fewer workers are required. The greater timeliness possible in many farm operations is significant. It is of most value in speeding up ground preparation and planting operations under adverse weather conditions and in avoiding losses in harvesting. The shift from horsepower to tractor power between 1914 and 1945 released 42 million acres previously used to produce feed for farm work stock.[21] The time of farm operators required for power maintenance has

[20] Cooper *et al.*, Progress of Farm Mechanization, p. 81.

[21] *Ibid.*, p. 24.

been reduced. The average size of farms has been increased. At the same time a higher degree of mechanical skill is necessary, and the investment and operating costs have become items of cash outlay. As a result farming has been further commercialized. These changes have affected crop production to a much greater degree than that of livestock and livestock products and have resulted in reducing the cost of producing the former relative to the latter.

Farm electrification has added to the power sources of the farm but has had its greatest influence in raising the living standards of farm families. In 1925 only 3 per cent of the farms had central-station electric service; by 1935 this proportion had increased to 11 per cent. In the latter year the Rural Electrification Administration was set up as a work-relief project and the following year was made a permanent organization. Through a plan of area coverage, cheaper construction costs, and self-liquidating loans to farmer nonprofit cooperative organizations, electric service became much more widely available. By 1940, 30 per cent of the farms had service, by 1946, 54 per cent, and by 1948, 69 per cent.[22] In some states the proportion ran much higher.

As farm power, electricity is adaptable chiefly to stationary jobs such as operation of pumps, milking machines, cream separators, brooders, and milk coolers and the lighting of farm buildings. In 1943 such uses took an estimated 37 per cent of current used on farms. Household appliances used 63 per cent. These uses made available to the farm home most of the conveniences and laborsaving devices enjoyed by the urban dweller.

Agricultural Education and Research. *Agricultural Colleges.* The colleges of agriculture were well established by 1914. The curriculums which had previously emphasized production were broadened to include agricultural economics and rural sociology. The earlier objective of training men for farming was modified by the increasing demands for trained leaders, for agricultural extension, vocational agriculture, college teaching and research, soil conservation, and businesses related to agriculture, as these phases developed. During World War I military demands reduced student numbers more than a third and during World War II reduced them almost to the vanishing point. In each case recovery was rapid after the war. Over the period the significant growth in agricultural research has greatly enriched the content of course work and has afforded an increasing amount of specialization at both the undergraduate and graduate levels.

Vocational Agriculture. The Smith-Hughes Vocational Education Act of 1917 provided for training in the secondary schools in agriculture, home

[22] Joe F. Davis, Electrification of U.S. Farms Near the Three-quarter Mark. *Agricultural Situation*, Vol. 33, No. 3, March, 1949, p. 8.

economics, trade, and industries. The agricultural and home-economics phases made practical training in these subjects available to large numbers of high-school students, only a small proportion of whom would attend agricultural colleges. Funds for this work are provided jointly by Federal appropriation and local school agencies. Teachers are trained mainly by the agricultural colleges with technical educational requirements usually given in colleges or departments of education. In 1944 more than 259,000 students in agriculture and 506,000 in home economics were reported on a full-time basis. In addition about four-fifths as many in agriculture and three-fifths as many in home economics were reported on a part-time basis.[23] The regular class instruction in these subjects is supplemented by the activities of the Future Farmers of America. These clubs, which are organized on a national basis, promote programs and individual projects for the development of agricultural leadership, cooperation, and citizenship. Agricultural training both in the classroom and through the FFA has encouraged the use of improved methods and has made farming more attractive to rural youth. Those who later go into other occupations should have a broader understanding of the problems of agriculture.

Agricultural Extension Service. The Smith-Lever Extension Act of 1914 provided for extension work in agriculture and home economics to be carried on cooperatively by the U.S. Department of Agriculture and the state colleges of agriculture. Some work of this kind had been carried on for some years by these and other agencies. The new Act provided for the "giving of instruction and practical demonstrations in agriculture and home economics to persons not attending or resident in colleges . . . and imparting information . . . through field demonstrations, publications, and otherwise."[24] The Extension Service was organized locally on a county basis with county agricultural agents and home-demonstration agents in a large number of counties.

It furnished a means by which the results of research could be interpreted and carried to farmers and homemakers. In addition to work with adults, boys' and girls' club work enrolled large numbers in the 4-H clubs and gave them instruction and leadership. Later, rural youth groups —the in-between age—were organized. Much of this educational work has been projected through existing farmers' organizations though it has not been limited to their membership.

During World War I the Extension Service performed a timely task in organizing farmer groups and in directing their efforts in the production of food. Later it aided in the educational phases of the farm programs

[23] Statistical Abstract of the United States, 1947, p. 140.

[24] Alfred Charles True, A History of Agricultural Extension Work in the United States, 1785–1923, p. 114.

of the thirties and again in World War II contributed greatly to directing agriculture's widespread part in the war effort. Meanwhile, the regular activities have been carried on—the teaching of new methods and economies in production, the keeping and interpretation of farm records, the need for and methods of soil conservation, methods of controlling insects and disease, developing cooperative activities in marketing and other fields—in short, making the farm business more profitable and home and community life more attractive.

A popular phase of extension work has been the agricultural outlook work which was undertaken in 1922. This work consisted of bringing together annually information regarding present and prospective supplies of farm products and the present and prospective demands for them, and interpreting this information as a guide to farmers. For many years the outlook was a late-winter program, but more recently it is carried on around the calendar with seasonal and regional emphasis on particular products somewhat in advance of the beginning of the farmers' production season. Its scope embraces both domestic and foreign situations and aids in balancing production with probable demand.

From 928 county agricultural agents and 279 home-demonstration agents in 1914[25] the extension staff for continental United States grew to 10,419 in 1946, divided as follows: county agricultural agents and assistants, 4,624; county home-demonstration agents and assistants, 2,974; county 4-H club agents, 433; administrators and supervisors, 703; subject-matter specialists, 1,685.[26] Through these groups the production and marketing phases of the agricultural industry are related directly to the results of the broad research program and to the needs of the nation and of the world for the products of the farm.

Agricultural Research. Prior to 1914 research in the agricultural experiment stations and in the U.S. Department of Agriculture had made much progress in solving the problems of production. A new phase, the economics of farming, was developing. Research in this field involved records under actual farming conditions, analysis of individual farming businesses, and comparison of farming systems and types as well as the broader problems of marketing, tenancy, rural credit, cooperation, and rural organization. The work of the experiment stations was broadened by additional Federal grants under the Purnell Act in 1925, the Bankhead-Jones Act of 1936, and the Research and Marketing Act of 1946. While the earlier efforts of research were directed toward the solution of immediate problems, the later developments have been expanded through greatly increased breadth of the problems and in increased specialization of

[25] *Ibid.*, p. 200.
[26] Agricultural Statistics, 1947, p. 687.

the workers. The experiment stations while engaged in a wide variety of problems have been primarily responsible for those of a local character. In some problems which apply in a region covering several states, joint efforts of the several stations have economized effort. In the larger problems of national scope the state experiment stations cooperate with the U.S. Department of Agriculture, which takes the lead.

To aid in the solution of these broader problems four regional laboratories apply agricultural and industrial chemistry in developing new uses for farm products. Other regional laboratories are working on problems of particular products. Agricultural research uses the basic sciences such as chemistry, geology, botany, and entomology on problems of production and utilization. It uses economics with its tools of accounting and statistics on problems of supply, price, consumption, and trade relations. Thus does research in agriculture keep pace with that in other lines.

Secretary Anderson thus epitomized the results of science as applied to the farm:[27]

> We now have tractors and attachments that pull our heavy equipment and can dig holes, grade roads, clean barnyards, lift loads, and grind feed. We have hens that lay twice as many eggs as chickens did a few years ago. We have alfalfa, wheat, flax, and oats that are wonderfully resistant to plant diseases. We can buy a kind of chemical that kills weeds and, used in another way, stimulates the growth of fruit and vegetables. We have new kinds of cattle and sheep and hogs that give us more wool or meat or bacon; and we have surer ways to keep them healthy and free of pests. Insecticides make our houses and barns more sanitary and comfortable. We have hybrid trees, hybrid corn, and hybrid onions of almost unbelievably higher yields. Many of the mysteries of the good earth have been disclosed to us, and we use the knowledge to till the soil for its welfare and ours. Airplanes take some of our produce to market; new kinds of packages and processes keep it fresh and wholesome. The corncobs that we used to burn or throw away have been given a good use in industry. These are the results of a few years of agricultural research.

To convert these gains into "the life more abundant" farmers must go farther. They must keep abreast and make adjustments to current demands, maintain a business with good income and controlled expenses with regard both to production and marketing, and through their efforts both as individuals and as members of groups strive to translate the results into better living.

Unfortunately the rate of penetration of scientific results to the grass roots is slow. Some farmers resist change. For others the rate of adaptation

[27] Clinton P. Anderson, Life More Abundant. Foreword, U.S. Department of Agriculture *Yearbook*, 1943–1947.

is limited by lack of finances or equipment or the small size of the farm units. Gradually, however, the teachings of the Extension Service, the vocational agriculture departments, and the colleges of agriculture are raising the general level, and large numbers of farmers are quick to utilize the results of research. The net results of educational effort are to broaden the range of earnings among individual producers, to reduce the number of producers in relation to consumers, and to provide an ample supply of food and fiber for the nation. On the other hand, they may accentuate the problems of surplus production and of the large number of farmers on low-income levels.

Farmers' Organizations. Out of the varied earlier experiences in the efforts to organize farmers into large and active groups came more realistic ideas of the functions of such organizations. Three outstanding organizations emerged. Two of these, the Grange and the Farmers' Union, carried over from the previous period; the third, the American Farm Bureau Federation, shortly came upon the scene.

Grange. The trend of membership in the Grange, which after its initial large expansion and contraction in the seventies had been generally upward from 1889 to 1914, continued to increase until it stood at more than 750,000 in 1946. The membership then represented 36 states and was heaviest in the northeastern, north-central, and far northwestern parts of the country.[28] The Grange is organized on a national, state, and local basis. The program is conservative in character, and emphasizes social and educational activities in which it makes provision for the whole family. Some cooperative undertakings are sponsored. The organization has actively supported or opposed a long list of legislative measures during its 80 years of history. During more recent years it has actively cooperated with many groups in supporting measures both for the betterment of agriculture and in the national interest.

Farmers' Union. From its initial high period in numbers, between 1914 and 1920, membership in the Farmers' Union dropped rapidly until it fell below 100,000 in the late twenties. By 1946 membership was about 140,000 with 350,000 represented in its cooperatives.[29] Its membership is strongly concentrated in the Great Plains area. It is organized on a national, state, and local basis. It is the most radical of the farmers' organizations and has taken a strong position regarding relief of underprivileged farmers, a broad scope of cooperative activities, and an aggressive educational program. It has strongly favored governmental assistance to agriculture and has taken a position on many national issues, although its methods for

[28] David Edgar Lindstrom, American Farmers' and Rural Organizations, p. 164.

[29] *Ibid.*, p. 206.

achieving these ends frequently are more radical than those of other farmers' organizations.[30]

American Farm Bureau Federation. The American Farm Bureau Federation had its inception in a number of county groups which were organized in New York, Illinois, and Iowa in 1911 and 1912. Similar developments followed in other states. The passage of the Smith-Lever Act in 1914, providing for the Agricultural Extension Service, gave a great impetus to this movement as many county farm bureaus were formed to back up the county extension agents. As this movement spread, state units were organized through federation of the county units. Among these the Illinois Agricultural Association was organized in 1916. By 1919, 18 state farm bureaus had been established, nearly all in the northern part of the country. These state units in turn were organized into a national body, the American Farm Bureau Federation, in 1919. A parallel development among farm women developed in connection with the work of the home-demonstration agents of the Extension Service and the American Home Bureau Federation was formed in 1922.

The national Farm Bureau organization was formed with a membership of more than 300,000. The increase was rapid, until the break in farm prices in 1920, then followed a fluctuating downward trend until 1933, when the membership numbered only half of that at the start.[31] From that low point a rapid increase took place and by the end of 1948 exceeded 1,325,000.[32] The membership is fairly well distributed over the country with its heaviest concentration in the Middle West.

The relationships of the farm bureaus and the Extension Service vary by states. In Illinois, for example, the relationship has been close. Farm advisers, or county agents, certified by the agricultural college, are employed by the county farm bureaus to direct a broad educational extension program. In some other states the two organizations have no direct connections, and the farm-bureau activities contain less of an educational character.

The character of the state farm-bureau organizations has varied greatly from state to state, both in activities undertaken and in the method of support. In some states the early organizations were largely educational in character; in others they developed mainly commercial lines of activity. As the organizations grew into units of larger scope, many service and commercial aspects were developed, handled for the most part by sub-

[30] DeWitt C. Wing, Trends in National Farm Organizations. U.S. Department of Agriculture *Yearbook*, 1940, pp. 957–959.

[31] Lindstrom, *op. cit.*, p. 181.

[32] *The Nation's Agriculture* (American Farm Bureau Federation), Vol. 24, No. 2. February, 1949, p. 3.

sidiary cooperative organizations. Among the activities developed in this field were the cooperative purchasing of farm supplies such as petroleum products, feed, fertilizer, coal, paint, etc., and mutual insurance of many kinds. These organizations from the start took an active interest in the development of cooperative marketing of many farm products. This support had much to do with the rapid growth of cooperatives, both in number and in volume of business, after 1915.

On the national level the American Farm Bureau Federation strongly supported the governmental legislative program for agriculture in the twenties and thirties. It has formulated a comprehensive program for agriculture with strong emphasis on the economic side.[33] It cooperates with the educational agencies in agriculture and with other farmers' organizations. In its policies it ranks between the other two groups. Because of its strength of numbers and its broad program it has wielded much influence in the national program for agriculture.

Through these three national farmers' organizations with their state and local subdivisions, farmers have achieved a measure of unity. Individual farm businesses are small as compared with industrial concerns, and the economic interests of farmers in one area are frequently in conflict with those in other areas, but the combined strength of numbers of farmers and value of their products is impressive. Through organization farmers have sought to further their interests and to hold their own in the competitive struggle with organized industry.

Transportation. The railway system of the country was well developed before 1914, although the maximum miles of road was reached in 1916. From that date until 1945 the miles of road declined about 10 per cent as less profitable and duplicating roads were abandoned. Between 1930 and 1945 the number of boxcars declined 30 per cent and stock cars 35 per cent, but the average capacity of all freight cars increased 11 per cent,[34] and longer trains and higher speeds maintained generally adequate service. The problem of rates has continued and was acute during the depression years of the thirties.

Highways, linking farms to shipping points and to central markets, took on a new significance with the advent of the automobile and motor truck. The character of the roads varied greatly. Some areas, well supplied with road-building materials, had a good system of turnpikes, which required only widening and surfacing; others without such supplies required new construction. Progress in construction of improved roads was slow until after World War I. In 1921 only 13 per cent of rural roads were

[33] Resolutions Adopted at 1948 Convention—Official Letter, American Farm Bureau Federation, Chicago, Dec. 22, 1948.

[34] Statistical Abstract of the United States, 1947, p. 511.

surfaced.[35] In the period between the two wars an extensive program of road improvement took place, under state auspices, supported by bond issues. Federal aid was given to states after 1921. County and even township units issued bonds to build roads. By 1945, 47 per cent of the rural roads were surfaced, and a fairly adequate system of arterial highways had been developed. About one-third of the farmers still did not have all-weather roads.

As roads were surfaced and improvements made in trucks, the number of farm-owned trucks increased. By 1945, 1.3 million farms had trucks. In addition trucks for hire and those distributing farm supplies added to the transportation facilities of farms. Truck hauling was used extensively first for short hauls and the marketing of perishable products like milk. The scope of trucking was widened both geographically and in kind of products and gave strong competition to railways, particularly in carrying dairy products, livestock, fruit, and other products for limited distances. Grain moves by truck to elevators or shipping points from which shipping by rail predominates. For long hauls, such as the movement of fruits and vegetables from the Far West or feeder and stocker cattle from the Southwest, movement is by rail rather than by truck.

The automobile has provided transportation for the farmer and his family parallel to the use of the motor truck in hauling his products and supplies. This greater mobility has reduced the time required for the management phases of the farm business and has made possible a greater participation in travel and recreation.

Inland waterway transportation continues to be used for grain and other heavy freight. Such movement on the central rivers, the Great Lakes, and the New York Barge Canal (formerly the Erie Canal) was important during World War II when all transport facilities were overloaded. The airplane has been used rather extensively for dusting for insect control and in emergencies such as the distribution of feed and supplies to snowbound areas on the Great Plains in the winter of 1948–1949 but has not been significant as a regular means of agricultural transportation.

The change in transportation facilities during this period greatly reduced the isolation of farm families, reduced the cost of moving products from the farm to market and of securing necessary supplies, reduced marketing losses, and aided in the preservation of quality of the products.

Land Policy. The struggle over conservation and use of natural resources which had focused in the West for two decades before 1914 was by no means over. Private interests were determined to exploit what natural resources remained in the public domain. For the next three decades the struggle continued, its emphasis at one time on forests, at other times on mineral lands, or water-power sites, or grazing lands. Many meth-

[35] *Ibid.*, p. 490.

ods of control were tried. In the twenties the Federal government entered the reclamation and water-power business. Problems in the irrigated areas ensued. Finally in 1935 the President withdrew the entire remaining public domain—166 million acres—in preparation for a nationwide conservation program.[36] During all this period of controversy homesteading had continued, in large part under grazing homesteads. Those in course of proving up when the withdrawal of 1935 took place were allowed to complete their entries. After classification some additional lands were opened, but completed entries fell off rapidly after 1939. In 1945 rural lands in Federal ownership totaled 458 million acres, or 24 per cent of the land area.[37] This area was administered by more than 13 agencies of which the Forest Service, Grazing Service, Office of Indian Affairs, and the General Land Office administered 86 per cent.

Following the withdrawal of public land in 1935, land classification, under which land was designated as suited for crop, range, forest, or mineral purposes, was completed and a policy initiated looking to the needs of all parts of the country. This policy was to undertake to correct the results of a century and a half during which much of the country's natural resources had been disregarded, wasted, or exploited. Many agencies came to have a part in the program; of these the Soil Conservation Service was charged specifically with problems of land use and conservation.

The Soil Conservation Service first undertook operations under individual contracts with farmers and through demonstration areas. Soon a plan was developed for cooperative action with soil-conservation districts organized under state laws, by which the Soil Conservation Service furnished technical help and the work and materials were provided by the cooperating farmers. By 1941, 42 states had established laws for conservation districts, and by 1945 all states had made such provision.[38] Districts organized totaled 662 by 1941 and 1,461 in 1945. From 1941 to 1945 the area placed in organized districts averaged 100 million acres per year, and the areas to which new treatments were applied increased annually from 4.7 million acres in 1941 to 13 million in 1945. The types of treatment varied much from state to state; they included contour cultivation, cover crops, crop-residue management, strip cropping, range properly stocked, seeding of range and pastures, woodland improvement, tree planting, terraces, diversions, drainage, irrigation, and farm and ranch ponds.[39]

The rate of adoption of conservation practices was greatly accelerated

[36] Roy M. Robbins, Our Landed Heritage, The Public Domain, 1776–1936, p. 422.

[37] L. A. Reuss and O. O. McCracken, Federal Rural Lands, p. 55. U.S. Department of Agriculture, 1947, mimeographed.

[38] Agricultural Statistics, 1946, p. 664.

[39] *Ibid.*, 1947, pp. 630–631.

by the Soil Conservation Act of 1936 and the AAA of 1938, under which the Federal government through benefit payments absorbed much of the cost. The Farm Security Administration, later the Farmers Home Administration, aided in applying the conservation program on low-income farms, and the Agricultural Extension Service has helped to promote the educational features.

A noteworthy start has been made, but many years will be required before the damage of a century and a half is overcome. What is the total scope of the task? To what extent will the 3.6 million farmers cooperating in 1945 continue if all Federal payments should cease? These questions are as yet unanswered.

Crop- and Livestock-production Changes. The major regional areas of specialization in agricultural production, as described earlier, were well established before 1914. Since that time these areas have changed somewhat as their production has been altered by the introduction of new crops and by shifts among products in response to price changes. The over-all picture of farm production through this period has been portrayed, including the sharp increase during World War I, the efforts during the between-war years to control production and to shift its trend toward a more permanent basis, and the further marked increase during and following World War II. The part that mechanization and research have contributed not only to volume of production but also in the direction of economy and the bettering of quality has been depicted.

Other widespread influences affecting production during this period include the introduction and spread of sweet clover, lespedeza, and soybeans, and the use of hybrid seed corn. Sweet clover, earlier considered as a weed by farmers, was recognized as a potential farm crop about the beginning of this period. Because of its use for soil-building purposes and as a rotation pasture crop its use spread rapidly. No data are available on total acreage, but harvested seed acreage rose to 556,000 acres in 1939, then declined to less than two-fifths of that figure. Lespedeza, a legume crop adapted best to the southeastern quarter of the United States, came into importance in the mid-twenties. It is used as a pasture, hay, and soil-building crop. Total acreage is unknown, but seed production in 1944, the high point, was obtained from 1.2 million acres. Lespedeza and sweet clover have been useful in connection with the conservation program.

Soybeans were grown on a very limited acreage before 1910, but annual data were not collected until 1924 when 448,000 acres were harvested for beans. This acreage increased steadily to 5.9 million acres in 1941. The war demands for vegetable oils and protein feeds brought a sharp increase to an average of more than 10 million acres for the years 1942 to 1947. Production of soybeans reached 201 million bushels in 1946 and 220

million bushels in 1948.[40] Some additional soybean acreage was used annually for hay and grazing purposes. Of the large production during the war years, 88 per cent was in the Corn Belt.[41]

Hybrid seed corn afforded the most striking change of the period. In 1929 hybrids adapted to the Corn Belt became available. In 1933 their use represented 13 per cent of the United States' corn acreage; in 1947 it exceeded 73 per cent for the country and 90 per cent for the Corn Belt. The average increase in yields of hybrid seed over open-pollinated varieties is about 20 per cent.[42] This increase in yield represented an addition of 500 million bushels to the 1948 crop.

Hemp was grown as an emergency crop during World War II. Acreages of peanuts, flax, dry edible beans, and dry peas were greatly expanded. Throughout the entire period since 1914 a marked shift in hay production has occurred from grasses to higher yielding legumes. Production of citrus fruits increased more than three times from 1929 to 1943.[43]

Egg production per layer increased more than 50 per cent during the period, while milk production per cow increased 13 per cent.[44] Livestock numbers in general change more slowly. When expressed in animal units of livestock fed, work stock underwent a steady decline. Dairy cattle and poultry followed a slow upward trend. Units of hogs were fairly constant except for a sharp expansion in 1922 and 1923, a drastic cut with the drought of 1934 and carrying through 1937, and a marked expansion during the early years of World War II. Beef cattle had two rather complete cycles with high points in 1919, 1933, and 1944.[45]

Unlike the earlier periods when increased production arose chiefly from expansion, the increases since 1914 represent largely the technological changes coming from research and mechanization plus the drastic stimulation of two war periods.

Changes for Later Treatment. Among the important influences affecting agriculture between 1914 and 1949 were changes in farm credit, tenancy, cooperatives, and taxes. As most of these phases will be developed in greater detail in later chapters only brief mention is made here.

Farm Credit. The Federal Land Bank was organized in 1916 to supply long-term credit to farmers. The land boom of 1919–1920 resulted in a

[40] Data on sweet clover, lespedeza, and soybeans from *Crops and Markets*, January, 1948, pp. 4–6; and Agricultural Statistics, 1949, p. 150.

[41] Johnson, *op. cit.*, p. 28.

[42] *Ibid.*, p. 32.

[43] *Ibid.*, p. 37.

[44] *Ibid.*, p. 38.

[45] R. D. Jennings, Animal Units of Livestock Fed Annually. U.S. Department of Agriculture FM64 and Supplement, 1947 and 1948, mimeographed.

rapid turnover of farms and a high mortgage debt which caused serious difficulties following the collapse in prices in 1920 and again in 1929. In 1933 the Farm Credit Administration was set up to provide credit of various kinds for farmers and helped to mitigate the serious financial situation of the depression. For farmers unable to secure other financial help the Resettlement Administration was established in 1935 to provide loans, grants, and directional assistance. This organization was succeeded in 1937 by the Farm Security Administration and it, in turn, by the Farmers Home Administration in 1946.

Farm Tenancy. From 25.6 per cent in 1880, the proportion of farms in the United States operated by tenants increased to 37.0 per cent in 1910 and to 42.4 per cent in 1930. By 1940, the proportion had declined to 38.7 per cent and by 1945 to 31.7 per cent, the lowest point since 1890. The proportion of farm land operated by tenants has also declined since 1930, but to a lesser extent than the number of tenant-operated farms. Coincident with the decline in rate of tenancy and reflecting the prosperous war years, the equity of farm operators in the value of farms they operated rose to 50.5 per cent in 1945 compared with 42.8 per cent in 1940.[46] The decrease in the proportion of tenancy and the increase in the operator's equity indicate a gain toward achieving the long-standing American ideal of owner-operated farms.

Farm Cooperatives. Throughout this period farmers have made increasing use of cooperatives as a means of promoting their organizations, marketing their products, and purchasing their supplies. Marketing and purchasing associations in 1913 slightly exceeded three thousand, and the value of business handled was 310 million dollars.[47] In the period 1925–1926 the number of associations had risen to 10.8 thousand, membership was 2.7 million, and total business 2.4 billion dollars. From this point until World War II the number of cooperatives declined slightly, the membership rose somewhat, and the value of business declined with lower prices in the early thirties but recovered after 1936. The war period brought a further increase in membership to 5.4 million and in value of business to 7.1 billion dollars.[48] Thus have farmers through their efforts tried to meet the competition of other business groups.

Farm Taxes. Since 1914 the tax burden on agriculture has increased greatly. Taxes on real estate and personal property have generally in-

[46] Graphic Summary of Farm Tenure in the United States, Cooperative Report, U.S. Departments of Agriculture and Commerce, 1948, pp. 2, 34.

[47] Statistical Abstract of the United States, 1947, p. 625.

[48] Grace Wanstall, Co-op Membership Continues to Grow. *News for Farmer Cooperatives* (Farm Credit Administration, Washington), Vol. 15, No. 8, November, 1948, p. 19.

creased gradually except where excise taxes supplanted them in part. During World War I income and added excise taxes affected some farmers, but rates were low. Most farm incomes were below income-tax exemptions during the depression years. World War II brought much higher farm incomes and also much heavier rates and lower exemptions of Federal income taxes as well as many new excise taxes. For most farmers a considerable share of the net income is absorbed by taxes to support the Federal, state, and local branches of government.

Summary

The period of 1914 to 1949 has presented a series of abnormal situations. From the relatively balanced situation of 1914, the demands of World War I threw farm production into high gear. The postwar price collapse in 1920 precipitated a long-delayed effort to secure legislative recognition for agriculture. The proposal to dump surpluses abroad failed, while that for stabilization through market organization bogged down in the depression of the early thirties. Emergency production control appeared promising but in the form tried was unconstitutional. Control through the promotion of conservation and supported by Federal subsidy served as a stopgap until the Act of 1938 combined production and marketing controls, conservation, and ever-normal granary storage. The problem of surpluses still was not solved, but the accumulated stocks proved to be a useful reserve when World War II again called for all-out production. Meanwhile the economic condition of agriculture had improved materially. World War II again threw production into high gear. High production at rising prices made the war period very profitable to farmers. The removal of price controls after the war raised prices and costs to still higher levels.

Major changes were taking place in other directions. Through mechanization a revolution of methods was taking place. Agricultural education and research applied science to agriculture in many new ways and made the results known in the classroom and on the farm. Through their own organizations farmers came to have a voice in national legislation and in business affairs related to their products. The automobile and truck plus a road system materially reduced distances. After long years of wasteful distribution of natural resources the land policy was turned about to try to salvage what remained. New crops and seeds contributed to both conservation and increased production of cash crops.

In 1950 agriculture again stands at the crossroads. Its investment is inflated, its productive capacity expanded, its costs high. Outside, the world situation is uncertain. The recovery of war-devastated countries and the reappearance of world competition point to smaller export outlets. The

domestic demand appears fairly secure for the present, buoyed up by heavy national expenditures for outside relief and domestic defense.

The Agricultural Act of 1949 holds out supports even higher than those of the war period and thus postpones the needed adjustments. In an effort to reduce the accumulating surpluses, control measures are being applied on a widening basis. The agricultural price problem is far from finding a satisfactory solution.

QUESTIONS

1. For the United States make the following comparisons between the periods of World War I and World War II: (*a*) economic and agricultural conditions for 5 years before the wars; (*b*) trends in agricultural production, prices, and land values during the wars; (*c*) effect of the wars on foreign trade in agricultural products; (*d*) the economic situation of agriculture at the close of the two wars; (*e*) conditions following World War I and World War II.

2. Trace briefly the following developments since 1914: (*a*) land values and land use; (*b*) transportation as related to agriculture; (*c*) changes in kinds and amounts of agricultural machinery; (*d*) provision for agricultural education; (*e*) market outlets for farm products.

3. What effects did the depressions of 1920 and 1929 have on our agriculture?

4. What legislative aids were undertaken as a solution? With what results?

5. What claims has agriculture to governmental assistance?

6. What is meant by parity price? When did parity appear?

7. Is parity price a valid goal for agriculture?

8. Does agriculture need a permanent plan of governmental assistance? Why or why not?

9. The land policy questions of this period relate primarily to land use. Why is this so?

10. What trends have taken place in the development of farmers' organizations?

11. List recent technological changes associated with agricultural production.

12. What effects have these changes had upon the farmer's efficiency? His income? His mode of life?

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Chapter 5. AGRICULTURE AS AN INDUSTRY

The remarkable changes which have taken place during the entire period of our national history have changed agriculture from the status of localized and independent self-sufficiency to that of a national industry. These changes have been traced in some detail in the preceding chapters. Yet the developments in agriculture have been just a part of the widespread changes which have affected all parts of our national life. Developments of equal magnitude and far-reaching consequences might be traced in manufacturing; the use of labor; transportation and communication; commerce, both domestic and foreign; banking; and social progress; and through all of these lines the growing influence of government is apparent. At many points the meshing of agricultural development into that of other industries has been noted. Thus at the middle of the twentieth century the agriculture of the United States is a part of a vast and complicated national structure, all parts of which are closely interrelated. The economic phases of this complicated organization are not limited by national boundaries, for many goods and services move from one country to another. It need hardly be pointed out that the rapid changes, which have marked the development of all these industries, are still going on and that the situation within any broad line of economic activity and the relationships among various industries will continue to undergo adjustments. We live in a dynamic world.

Characteristics of Agricultural Production

Some of the changes that have taken place in agriculture have been similar to those in other industries. The total scope of all these industries has broadened with the growth of the country. Technological developments—new inventions and methods—have been adopted as they became available. This kind of change has called for more equipment and more capital investment for each worker in order to increase his capacity (Fig. 5). Between 1930 and 1945, for example, the production per worker in agriculture increased at about the same rate as in manufacturing and mining.[1] For all industries which produce material goods the distance has

[1] Martin R. Cooper *et al.*, Progress of Farm Mechanization, p. 11. U.S. Department of Agriculture Miscellaneous Publication 630, 1947.

widened between the producer and the final consumer, necessitating extensive systems of distribution. Thus food, clothing, machinery, building materials, and nearly all other goods pass through a number of hands on the way to the final user. All these lines of activity, except that of government, are motivated by profits and hence have related problems concerning costs of production and the prices for their products or services. Many governmental activities, particularly those of a regulatory character, are closely related to the profits of some industry either by way of supporting or curbing them. From this fact all lines of industry are interested in encouraging those governmental activities which benefit them and in opposing those which limit their scope or their profits. As a result strong

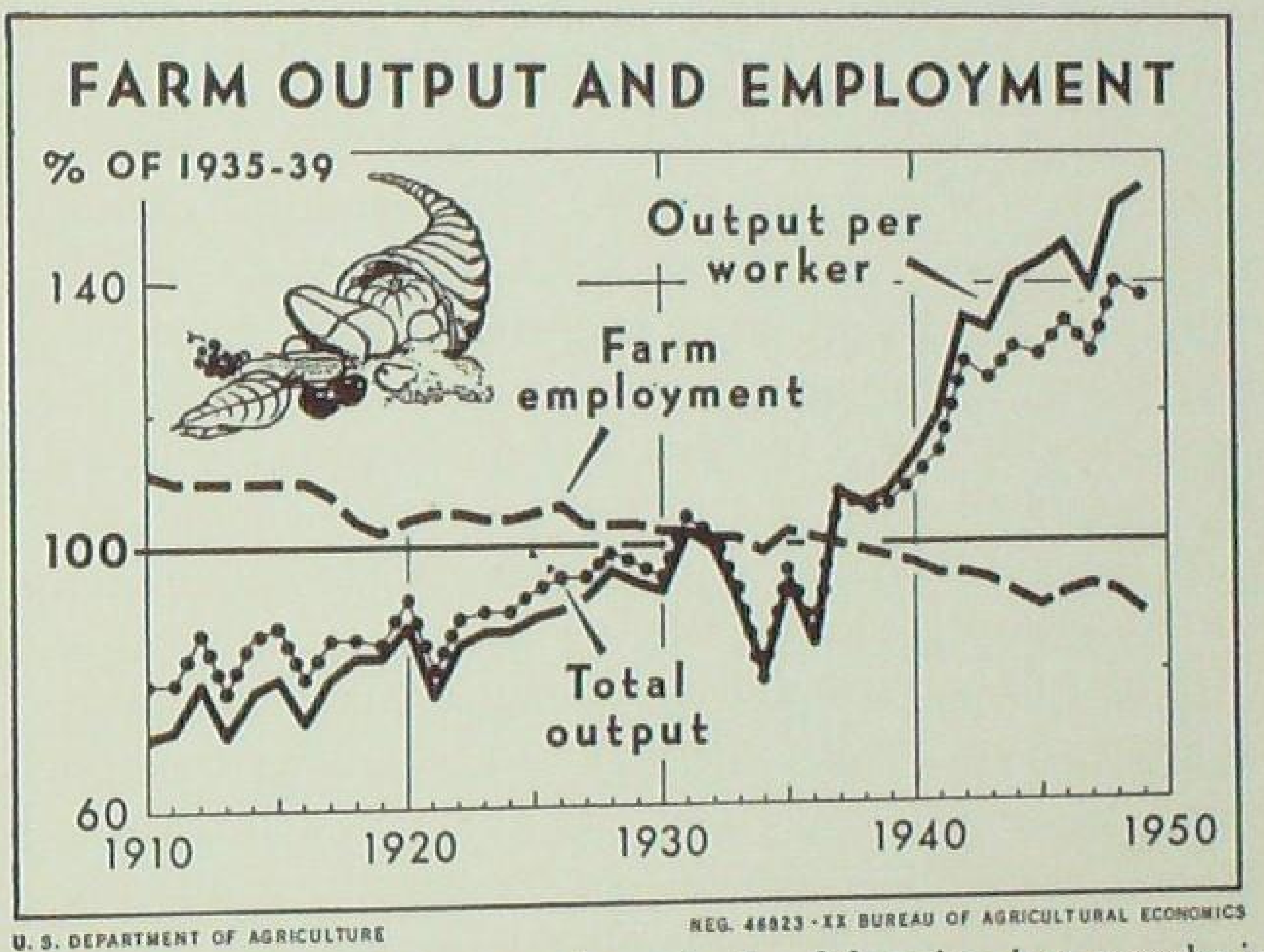

FIG. 5. The application of improved methods of farming has greatly increased the output per worker and reduced the number of workers needed.

lobbies or pressure groups have developed which attempt to influence legislation in the direction of their special interest rather than toward the national welfare.

Industries other than agriculture generally have been able to employ large-scale methods to a considerable extent. Those which supply a large part of our industrial products have commonly developed business corporations which in their largest forms represent huge concentrations of capital, employ large numbers of workers, and have a high degree of specialization both in management and among the workers. Thus problems of production, financing, and marketing the products are directed by highly trained specialists, while the processes of production may be so highly specialized that one worker performs only one of the hundreds of opera-

tions. There are, for example, only a few companies producing automobiles, but each employs thousands of workers. The manufacture of steel, or farm machinery, or the refining of oil are other examples. Similar types of organization prevail in service lines such as railways, air lines, telegraph and telephone companies; and in some lines of merchandising as illustrated by mail-order houses or chain stores dealing in foods, drugs, shoes, or furniture. Much of the products of the farms goes to big corporate businesses for processing—meat packers, milling companies, dairies, tobacco and cotton manufacturers. In many industrial concerns the units are much smaller than those indicated, but the fundamental principle of specialization is the same. Individual business units, in which one person provides the capital and manages and operates the business with only a few hired workers, are limited very largely to smaller retail stores and to professional men such as doctors or lawyers who supply services rather than material goods.

Agriculture, on the other hand, is made up of a very large number of relatively small units, nearly all of which are controlled by a single operator. This operator or farmer normally owns all or a part of the capital invested, he and his family supply all or a large part of the labor force, and the family lives at the place of business. The degree to which specialization can be applied is, of course, quite limited.

Despite the fact that a small number of relatively large farm units have succeeded, farming is not readily adapted to large-scale operations. It is a biological industry, dealing with living things, crops and animals, which cannot be handled on a time-clock basis. Farming is peculiarly subject to climatic conditions which not only change the character of the work from season to season, but frequently cause drastic changes in the daily program. For the same reason farm machines can be used only a small proportion of the working days. This inability to standardize farm operations to a high degree and the biological nature of the industry require a type of organization which is highly adaptable to changing conditions. This type has developed in the family farm. The small size of unit so prevalent in agriculture definitely limits the size and degree of specialization of the labor force, the amount of capital employed, and the volume of products to be marketed. This disparity of size of unit in comparison with other industries, particularly as applied to the marketing of products, the purchase of supplies, and in representation, has accounted for much farmer participation in cooperative enterprises and farmers' organizations and in demands for governmental aid when conditions were adverse, as in the twenties and thirties.

The Basis of Farm Production. The number of farms in the United States as listed in the 1945 Census of Agriculture was 5,858,889, a slight

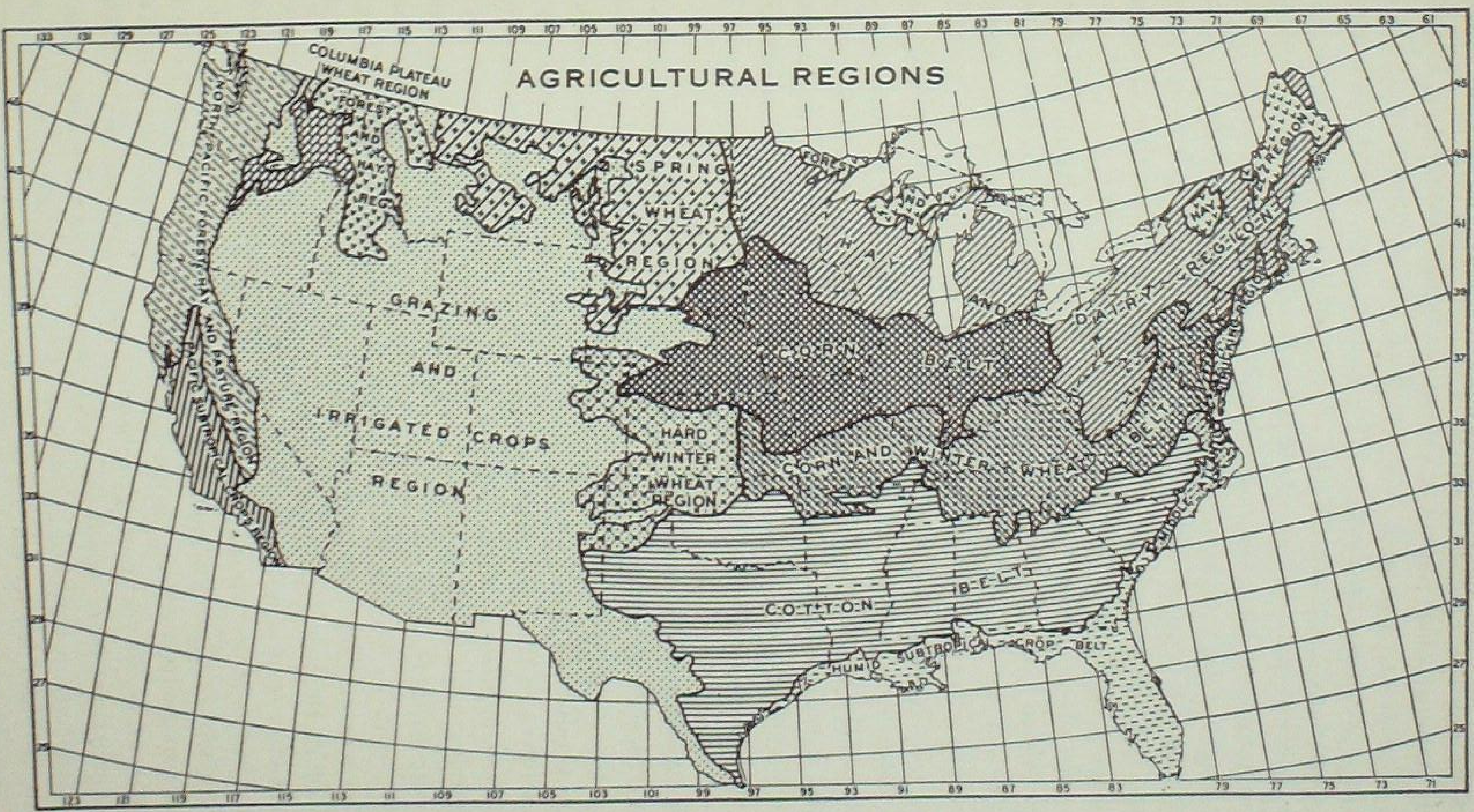

FIG. 6. American agriculture has developed broad areas of specialization in most regions of the country.

reduction from the 6,096,799 enumerated in 1940. This large number of units leads naturally to the question, "What is a farm?" Briefly, the Census defines a farm as any area of 3 acres or more (or of smaller area if the value of its agricultural products is $250 or more) on which some agricultural operations are performed by one person with or without the assistance of members of his household or of hired employees. Obviously wide differences would be expected among different areas of the country, as a New England dairy farm, a Southern cotton farm, a Middle Western grain and livestock farm, a Great Plains cattle ranch, and a Pacific Coast fruit farm (Fig. 6). Indeed any careful observer is aware that farms in any community have many points of difference.

To describe more fully the wide variety of farms, numerous classifications are provided in the Census. Among these are classes based upon type, area, area of harvested crops, value of implements and machinery, number of workers, value of products whether sold or used, and value of products sold. Each of these classifications is useful for certain purposes, but no one of them alone gives an adequate picture of the contributions of the many farms to the economic structure of agriculture. A farm of 40 acres, for example, may be adequate for a good business unit in some very intensive kinds of production such as vegetable gardening, certain kinds of fruit, or poultry but would be far too small for a grain farm or a livestock ranch.

A classification of farms by economic classes was undertaken for the first time in the 1945 Census of Agriculture based upon a representative sample of all the farms in the country. Seven classes were established based upon the value of products whether sold or used and upon the value of land and buildings. In general the units with highest value of products and highest investment fall in Class I, with each successive class representing lower values of production and investment. Classes V and VI are part-time farms, and Class VII includes all which do not fit other classifications. With few exceptions Classes V, VI, and VII included only farms the value of whose total production in 1944 was under $1,200; so these classes are grouped together. Under the price level of 1944 it is evident that such farms contributed but little to production available for market. The significance of such a classification is shown in Table 18.

The above classification indicates that the 3.3 million farms, or 57 per cent of the total, which are in groups I through IV accounted for more than 90 per cent of the value of farm production in 1944 and more than 95 per cent of the value of products sold. They represented a large proportion of the value of land and buildings and farm machinery, as well as the acres of cropland harvested. These groups comprise the commercial types of farms. The 2.5 million farms, or 43 per cent of the total, in groups

V, VI, and VII, on the other hand, represent a small proportion of the value of farm investments, production, or sales. These groups include 38 per cent of the farm population and an equal proportion of the farm children under fourteen. Of those on a part-time basis some no doubt derive their income mainly from other occupations, hence fare better as families than the agricultural picture indicates. Many farmers, however, with meager resources eke out a precarious living.

TABLE 18. FARMS OF THE UNITED STATES, BY ECONOMIC CLASSES*

Item	Class					Total
	I	II	III	IV	V, VI, VII	
Number of farms (thousands)	102	409	1,173	1,662	2,513	5,859
Per cent	1.7	7.0	20.0	28.4	42.9	100.0
Value per farm of products sold or used	$39,352	$10,500	$4,662	$1,876	$568†	$3,171
Per cent	21.9	23.5	30.0	17.1	7.5	100.0
Value of products:						
Sold (per cent)	24.2	25.2	30.6	15.4	4.6	100.0
Used (per cent)	2.8	9.5	25.0	31.2	31.5	100.0
Acres of cropland harvested (per cent)	11.1	22.2	34.4	21.8	10.5	100.0
Value of land and buildings (per cent)	16.9	22.5	27.5	17.9	15.2	100.0
Value of implements and machinery (per cent)	12.5	23.5	36.0	18.7	9.3	100.0
Number of autos (per cent)	4.6	11.9	27.1	26.2	30.2	100.0
Farm population (per cent)	3.7	8.5	21.3	28.5	38.0	100.0
Boys and girls under 14 (per cent)	3.6	8.0	20.8	29.7	37.9	100.0

* Special Report, 1945 Sample Census of Agriculture, pp. 120–127.
† Class V, $575; Class VI, $825; Class VII, $295.

A representative survey of open-country residences in two southern Illinois counties throws some light upon the character of farms in a mining and oil-producing area in 1947. Of the 365 rural families, 26 per cent were full-time farmers; 18 per cent, mostly retired, did some farm work, but no outside work; 14 per cent were part-time farmers, with considerable outside work; 16 per cent were nonfarm workers with small farm enterprises; 16 per cent were nonfarm workers; and 10 per cent were nonworkers, mostly retired.[2] Of the entire group only 26 per cent would ordinarily be considered as farmers, but at least 74 per cent would qualify under the definition in the Census. The economic and social problems of agriculture apply up and down the entire economic scale, though in varying degrees.

The very large number of farming units producing on a commercial basis creates strong competition within the agricultural industry. Because

[2] Illinois Agricultural Experiment Station Report, 1947–1948, p. 144, 1950.

of differences in natural conditions in a country of so large a geographical area, production of most products is greatest in certain regions; yet many farmers are engaged in the production of each product. For products which enter extensively into world trade like wheat, cotton, tobacco, wool, sugar, or vegetable oils the competition becomes world wide.

The Role of Government in Farm Production. The place of agriculture as an industry is obviously influenced greatly by governmental measures. Attention has been directed in previous chapters to such measures as they affected land policy, the promotion of agricultural education, international trade in farm products, specific agricultural legislation, and general regulatory measures which reached their peak during World War II. But governmental activities may be restrictive as well as helpful. The costs of government involve taxation which is applied not only at national but also at state and local levels. Moreover, legislative action in a democracy is always political as well as economic, and the two points of view may differ. Thus the policy of government and the methods of carrying out a given policy are subject to change. Pressure groups or "blocs" or "lobbies" of all kinds both outside and within agriculture bring strong influences to bear upon legislation being considered. The result is frequently a compromise which represents political expediency at the time rather than the best possible interests of the nation from an economic viewpoint.

Problems of Agricultural Production. Out of the historical background of agricultural development and the interrelations of agriculture, other industries, and government, many economic problems have arisen which are perennial in character. What products are produced, and how much of each is needed in order to have enough but not a burdensome surplus? To what extent can the demand for farm products be stabilized? What represents a fair level of prices, and how is it to be achieved? What happens to the products after they leave the farmers' hands, and are the services performed adequate in character and reasonable in cost? To what extent does cooperative action of farmers improve their position? What are the credit needs of farmers, and do they have access to adequate capital resources at reasonable interest rates? What returns do farmers receive for the taxes they pay? How put land to its best use and yet conserve it? How provide for landless farmers? How may farm living be improved? To what extent should agriculture rely upon government aid? All these are problems of national import; they require analysis at the national level since most changes must be applied there. They have, moreover, a direct application to each of the large number of farm units. Upon what basic principles should the individual farm be organized and operated to best utilize its resources as a business unit?

What Does American Agriculture Produce?

Before considering this question the term "production" should be defined. Production has been used in previous chapters in the popular sense to include the various processes of growing and harvesting a product, as wheat for example. This popular use excludes marketing. The economist would include all the processes until the final product, flour or bread, is in the possession of the consumer. Thus not only growing and harvesting of the wheat, but its shipment, storage, milling, baking (if bread is the final product), and distribution to the consumer are parts of economic production. All these processes affect the form in which the product is desired, the place where it is wanted, the time when it is useful, or its possession by the person who will use it. For the present purpose the popular rather than the economic meaning of production will be used as expressing more fully the farm point of view, and the later processes will be included under marketing.

While production in agriculture goes on rather continuously from year to year, it is most conveniently measured on an annual basis. Extensive information on production is enumerated for the entire country every 5 years in the decennial and agricultural censuses. Data for the other years, as well as much information not covered by the Census, are compiled currently by the U.S. Department of Agriculture through an elaborate system of reports from farmers, storage firms, processors, etc. The information available covers not only past production, but forecasts of the current year's production based upon farmers' intentions, planting, and condition reports.

Production of any product varies from year to year because of weather conditions, changes in number of acres planted or livestock bred, and the like. To overcome the year-to-year variations and to provide a standard for comparison, an average of the preceding 10 years is often used. This approach is realistic; it calls, however, for some knowledge of conditions during the period covered. The period 1937 to 1946, for example, includes the years of the late thirties when the large accumulations were being built up in the ever-normal granary and the war and immediate postwar years when high production was the rule. Moreover, weather conditions were then more favorable than could normally be expected. The result is a high average, which nevertheless represents fairly well the expanded state of farm production in the postwar period.

Crop Production. Acreage and production figures for 19 annual crops, each of more than a million acres, and of 11 fruit crops indicate both total and relative average production (Table 19). This table omits data for minor crops including seed crops. All vegetable crops for commercial use

are grouped together. Figures are available currently for 52 crops, which together represent about 91 per cent of the harvested crop acreage of the country. Yields are country-wide averages and hence may appear to be low when compared with those usually secured in the highest yielding areas.

Livestock Production. Production of livestock and livestock products is more difficult to measure. Egg and milk production are easily expressed in annual amounts. Numbers of animals on hand Jan. 1 is unsatisfactory for they include chiefly breeding stock and show trends rather than annual production. Numbers of young animals born is more useful, although part of this annual "crop" goes to replace or expand breeding herds. Annual slaughter indicates the numbers used for meat purposes. For a particular year this may exceed production if herds are being reduced or fall below it if they are being expanded. The total size of the livestock enterprises is more accurately portrayed in a recently developed series of data which include all livestock fed during a year. Animals are listed in terms of the feed they consume including concentrates, hay, pasture, and other roughage.[3] This series is expressed in animal units, a unit being an average milk cow with other animals being rated in terms of comparative feed consumption. In Table 20 (page 108) all these measures are used where applicable, 10-year averages being used to avoid the annual variations in animal numbers.

Total Volume of Production Stable. The total volume of agricultural production of the United States is remarkably uniform, even through war and depression periods. This situation results from the large area of the country and the wide variety of products by which annual increases or decreases of one product or group of products or in one area do not greatly influence total production. This uniformity is shown by index numbers of total production for the period since 1914 (Table 21). Throughout this period a gradual increase in production took place. For particular groups of products marked changes in volume occurred during World War I, the drought years of 1934 and 1936, and during World War II. Total production was reduced during the drought years, but by a smaller amount than might have been expected; it increased by an accelerated rate during World War II.

During nearly all of this period, however, agricultural production, as we have seen, was out of balance with demand. During the two war periods farmers were being urged to greater and greater production particularly of those products most needed for the war effort, while the be-

[3] R. D. Jennings, Animal Units of Livestock Fed Annually. U.S. Department of Agriculture FM64 and Supplement, 1947 and 1948, mimeographed.

TABLE 19. AVERAGE ANNUAL ACREAGE AND PRODUCTION OF LEADING CROPS, UNITED STATES*

Crop	Acreage harvested, 1937–1946 av. (thousands)	Yield, 1937–1946 av.	Production, 1937–1946 av. (thousands)
Corn, all, bu	89,616	31.4	2,813,529
Wheat, all, bu	58,832	16.1	942,623
Winter, bu	(41,724)	16.6	(688,606)
Spring, bu	(17,108)	14.9	(254,017)
Oats, bu	38,056	32.3	1,231,814
Barley, bu	12,615	23.7	298,811
Rye, bu	3,055	12.1	37,398
Flaxseed, bu	2,938	9.0	26,756
Rice, bu	1,298	46.9	60,460
Sorghum (grain), bu	6,221	15.7	99,791
Sorghum (forage), tons	8,431	1.42	11,975
Cotton, lint, bales	22,631	254.2	12,014
Cottonseed, tons	....	....	4,947
Hay, all, tons	73,018	1.34	97,563
Beans, dry edible, 100 lb	1,832	9.14	16,716
Soybeans for beans, bu	7,162	18.8	134,642
Cowpeas for peas, bu	1,117	5.3	5,854
Peanuts, threshed, lb	2,534	708	1,750,704
Velvet beans, lb	1,885	813	1,526,000
Potatoes, bu	2,826	139.3	392,143
Tobacco, lb	1,644	1,008	1,664,265
Commercial truck crops	3,565		

Fruits	Area covered	Production, 1937–1946 av. (thousands)
Apples (commercial), bu	....	115,058
Peaches, bu	....	66,725
Pears, bu	....	30,222
Grapes, tons	....	2,705
Cherries, tons	12 states	170
Apricots, tons	3 states	240
Prunes, tons	3 states	326
Oranges, boxes	5 states	93,087
Grapefruit, boxes	4 states	47,478
Lemons, boxes	1 state	12,808
Cranberries, bbl	5 states	674

* Crop Production, Annual Summary, 1948.

TABLE 20. AVERAGE ANNUAL LIVESTOCK PRODUCTION, UNITED STATES, 1937–1946*

Cattle and calves	Milk cows	Other cattle	All cattle
On hand Jan. 1 (thousands)	25,973	48,828	74,801
Calf crop (thousands)	......	......	32,240
Production (millions of lb.)	......	......	17,126
Milk production (millions of lb.)	......	......	113,515
Hogs	**Spring**	**Fall**	**Total**
On hand Jan. 1 (thousands)	......	......	59,200
Pig crop (thousands)	52,965	33,958	86,923
Production (millions of lb.)	......	......	18,369
Sheep and lambs	**Spring**	**Fall**	**Total**
On hand Jan. 1 (thousands)	......	......	51,039
Lamb crop (thousands)	......	......	29,666
Production (millions of lb.)	......	......	2,038
Shorn wool (millions of lb.)	......	......	353
Total meat production, cattle, hogs, sheep (millions of lb.)	......	......	37,533
Chickens on farms	**Hens and pullets**	**Other**	**Total**
On hand Jan. 1 (millions)	425	47	472
Raised (not including broilers)	......	......	767
Broiler production (commercial)	......	......	199
Meat production (millions of lb. dressed weight)	......	......	3,123
Egg production (millions)	......	......	46,845
Horses and mules	**Horses**	**Mules**	**Total**
On hand Jan. 1 (thousands)	9,961	3,848	13,809

Animal units fed annually† (thousands)	
Dairy cattle	31,360
Beef cattle	20,016
Hogs	15,417
Sheep and goats	7,954
Poultry	10,466
Horses and mules	11,124
All livestock	96,337

* Meat Animals, Farm Production and Income, 1924–1944. U.S. Department of Agriculture 1947 and current releases, mimeographed.

† R. D. Jennings, Animal Units of Livestock Fed Annually. U.S. Department of Agriculture FM64 and Supplement, November, 1947 and 1948, mimeographed.

tween-war years were plagued with the surplus problem. Why are adjustments so slowly made on the production side?

Basis of Stability. Adjustments in production of particular products or of total production arise from decisions of large numbers of individual farmers. Each farmer is limited in the scope of his adjustments. His investment is largely in fixed form in land, buildings, machinery, and breeding stock; his acreage suitable for harvested crops is limited; his labor force is made up largely of his own and family labor; his production is subject to biological limits; his operating expenses are to a large extent fixed; he often sees little relation between his individual decisions and the total production picture; and, of course, lack of information and inertia play a part.

TABLE 21. INDEX NUMBERS OF THE VOLUME OF AGRICULTURAL PRODUCTION FOR SALE AND FOR CONSUMPTION IN THE FARM HOME, UNITED STATES, 1914–1949*
(1935–1939 = 100)

Year	Index	Year	Index	Year	Index
1914	86	1926	100	1938	103
1915	86	1927	98	1939	106
1916	83	1928	102	1940	110
1917	86	1929	99	1941	113
1918	90	1930	98	1942	124
1919	91	1931	102	1943	129
1920	92	1932	96	1944	137
1921	83	1933	96	1945	134
1922	91	1934	93	1946	137
1923	94	1935	91	1947	136
1924	98	1936	94	1948	138
1925	97	1937	106	1949	138

* *Agricultural Outlook* charts, 1950, p. 1.

Within this framework the individual may make such adjustments as shifting acreage from one crop to another, selling crops directly or feeding them to livestock, or changing the proportions of the kinds of livestock raised. In the usual case the shifts must be made gradually. The prospect of a more favorable return for one product than for another will stimulate a shift toward the favored product. Thus the higher prices of the war periods served to direct production into those lines whose prices increased most. The low prices of the depression years did not correspondingly shrink production, because expenses of investment and operation would continue and the farm resources could not easily be put to other uses. A farmer under a heavy debt load may even increase his volume of produc-

tion in an effort to meet his necessary outlays for debts and operating expenses.

Thus the combined result of the year-to-year decisions of the 3.3 million farmers who produce nearly all the marketable farm products point out the direction taken by agriculture as a whole. Some tend in one direction and some in another as each seeks to follow the course which he considers best suited to his conditions.

Whether these intentions materialize into production depends in part upon climatic and other conditions over which farmers have little or no control. Frost, drought, floods, hail, storms, diseases, and insects all take their toll. For example, the 1948 corn acreage harvested was 2 per cent greater than in 1947, but because of a more favorable season production was 53 per cent greater. The change in average yield from 28.4 bushels in 1947 to 42.7 bushels in 1948 was abnormal in extent, but it illustrates the difficulty of realizing intentions.

Over a longer period other influences also affect farm production. Erosion is still taking a heavy toll in productivity and making some land untillable. If farmers decide to use their land less intensively than during the war years, total production would be reduced. On the other hand, the results of research, such as hybrid corn, new varieties of grains, improved breeding and feeding of livestock, better control of insects and disease, all operate to increase the production per unit. The same is true of improvements in machinery. Conservation has been advocated to reduce production of certain crops through shifting acreage to soil-building crops. The reduction, however, is only temporary, for soils once built up usually produce as much total volume on fewer acres. The use of fertilizer increased greatly during the war and is likely to continue. Irrigation, drainage, and clearing are bringing some additional land into use. These improvements are well worth while for they contribute to more economical production but tend to expand the total output. The effect of these changes points to a normal production in the postwar period about one-fourth greater than that of the prewar years. Thus from a national viewpoint the attainment of restricted production goals of certain products is nearly impossible, because that objective is constantly disturbed by influences of short-time or longer time character. At the same time total agricultural production tends to expand steadily but retracts with great difficulty. From the standpoint of the nation's food supply this stability is a great asset; from the viewpoints of the farmers' income it is at times a liability.

Legislative Attempts to Adjust Production. Because agriculture characteristically is slow in adapting to changed conditions agricultural adjustment has been unable to keep pace with the violently changing situation since 1914. As indicated earlier, total production did not change mate-

rially until the time of World War II. The unfavorable prices of the twenties and thirties came mainly from the failure of the markets to absorb the products at reasonable prices and furnished the incentive for legislative efforts a part of which were applied to the production side.

One outstanding influence on the production side is educational rather than legislative. This is the *Agricultural Outlook* which was inaugurated in 1924 and has since been greatly refined as a means of bringing together and interpreting economic information both domestic and foreign as a guide to farmers' production. This information is made available currently and has proved valuable to many individual farmers in planning their annual production programs. In its influence on production the *Outlook* has been overshadowed by the major farm programs, and unfortunately too few farmers have used it as a guide.

The AAA programs of 1933, 1936, and 1938 attempted to regulate annual production first by restricting acreages of certain crops and numbers of hogs, then by shifting acreage from soil-depleting to soil-conserving crops, and finally by acreage limitation and storage of huge carry-overs, the whole implemented by benefit payments.

During World War II national and state goals were established in an effort to direct farm production voluntarily into lines most needed for the war effort. The Agricultural Act of 1949 retains high supports and postpones the operation of the flexible price support geared to the available supply. This Act became effective in 1950; how valuable it will prove remains to be seen. The other attempts to regulate farm production during this period of rapid and acute changes have had a very limited measure of success. Acreages of major crops were reduced, but this reduction was offset by planting crops on the best land, use of better seed and more fertilizer and labor, and by substitute crops on the restricted acreage. The storage method of disposal was facing a crisis when World War II relieved the situation and was again in a serious condition in 1950.

Annual Supplies of Farm Products

The long-range stability of farm production is an asset to consumers in providing constant and adequate supplies of foods and fibers. It is the annual production of specific products with their ups and downs, however, that affects farmers' incomes. While annual production makes up the major part of annual supplies,[4] carry-overs and imports must also be considered.

For most products the production of one year is never entirely used up when that of the following year becomes available. This carry-over differs

[4] This use of supply is not to be confused with market supply which will be treated later. Supply as used here agrees with that in the *Agricultural Outlook.*

with the kind of product. Apples can be stored for limited periods, but the old crop does not last long enough to compete with the new. Potatoes are grown in early, intermediate, and late areas, and the old crop of the late areas is still available when the new crop comes to market from the early areas. Other fruits and vegetables are carried over either in canned or frozen form. Meats, dairy products, and eggs are held for limited periods in cold storage. Carry-over is most important with less perishable crop products such as grains, cotton, and tobacco. Carry-over of grains normally represents but a small part of annual production, although they were much higher than usual in the early part of World War II (Table 22). Carry-over of cotton averages about a year's production and that of tobacco somewhat more. In general, however, the reserves of farm products are low at the end of the production year.

TABLE 22. AVERAGE ANNUAL SUPPLY OF SELECTED CROPS, UNITED STATES, 1937–1946*

Crop	Carry-over (millions)	Production (millions)	Imports (millions)	Total supply (millions)	Per cent production is of total supply†
Corn, bu	393	2,814	2	3,209	88
Wheat, bu	309	943	19	1,271	74
Oats, bu	205	1,232	26	1,463	84
Barley, bu	64	299	13	376	79
Rye, bu	20	37	3	60	62
Flaxseed, bu	6	27	14	47	58
Sorghum grain, bu	....	100			
Cotton lint, bale	10	12	‡	22	55
Cottonseed, tons	....	5	..	5	100
Hay, all, tons	14	98	..	102	96
Beans, dry edible, bags	2	17	‡	19	89
Soybeans, bu	9§	135	‡	144	94
Cowpeas, bu	....	6	..	6	100

* Feed Statistics, December, 1948; and Agricultural Statistics, 1947, 1949.
† Rounded to nearest per cent.
‡ Less than half of one unit.
§ Period 1942–1946.

No country is self-sufficient in farm products. The United States does not produce bananas, coffee, or tea, so must depend entirely on other countries for its supply. Of some products such as sugar domestic production is insufficient; so a part of the supply must be imported. More than enough of wheat, tobacco, and cotton are produced, but some of each is imported for particular uses. How much of a particular product will be imported in a year obviously will depend upon production levels

in exporting countries, relative prices here and abroad, and any restrictions to the free movement of goods in international trade channels. The amounts shipped in make up a part of that available. Further consideration will be given to imports at a later point.

What Should Be Produced? The annual supply of domestically produced farm products depends largely upon current production. In general carry-overs are small and imports are limited. The difficulties of too small a margin were demonstrated by the drought years of 1934 and 1936, that of too wide a margin by the ever-normal granary accumulations of 1940 to 1942. Moreover, the rate of adjustment is limited if disruption is to be avoided. These considerations point to a need for a stable middle course in production geared to the demand for farm products.

The question of how much should be produced should be carefully distinguished from that of what could be produced. The latter is a question of capacity. H. R. Tolley has stated that our farm production has never yet reached capacity, if conditions should make it worth while to devote more resources to that end.[5] On the other extreme many persons in the early postwar period greatly overestimated the ability of our production to feed millions of needy people in other lands. The practical problem for the future, of course, is how much will it pay to produce? This question leads directly to a consideration of the demand for farm products.

Summary

An understanding of agriculture necessitates its appraisal as an industry and as one of the major segments of American economic life. It resembles other industries in the adoption of new technical developments and in the widening gap between producer and consumer. It differs in organization, however, being composed of many small units in which the individual farmer performs the triple role of capitalist, manager, and worker. This type of organization as well as the nature of the production permits less specialization of effort and standardization of product than is characteristic of other lines. Of these many units 57 per cent account for 90 per cent of total production and 95 per cent of marketings. Competition is strong in every phase of agriculture. Government plays an important role through support by legislative action on the one hand and the weight of taxation on the other. The problems of agriculture are varied; they apply both to the industry as a whole and to the individuals who comprise it.

Although the annual output for individual products is subject to all the variations arising from weather and shifts in farmers' plans, the total

[5] "How Much Can Farmers Produce in Peacetime?" Address at Des Moines, Iowa, Feb. 15, 1946.

volume of production is remarkably stable. This stability stems from the large geographical area of the country and the limited adaptation of farm production to rapid adjustment. When markets contract, this stability of production creates surpluses and low prices—the incentive for legislative relief.

Although carry-overs from previous years and imports figure in the annual supplies, for most farm products these form a minor part. The available annual supply thus depends largely upon annual production. For particular products the distance between scarcity and surplus may become narrow at times as production or demand changes. Historically the threat of surpluses has caused more concern than any limitations on our capacity to produce.

QUESTIONS

1. In what respects is agricultural production similar and in what ways is it different from industrial production?
2. What is a farm? How many are there?
3. How many farms are important commercially?
4. What interest does the Federal government have in agricultural production?
5. What are the major crops for the country?
6. What is a normal annual production of each?
7. How many of each of the important classes of livestock do we have?
8. What is included in the annual supply of farm products?
9. What proportions do carry-overs and imports represent of the total supply of farm products?
10. How may the stability of farm production be accounted for?
11. How do farmers know how much of each product to produce?
12. What influences determine how much farmers will produce?
13. What influences determine how much they will market at a given time?
14. Can governmental controls provide the "right" amounts of farm products?
15. To what extent have previous methods of handling surpluses been satisfactory?
16. What provision is made under current legislation for disposing of surpluses?
17. How can we have national abundance without burdensome surpluses?

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Chapter 6. THE BASIS OF DEMAND FOR FARM PRODUCTS

Disposition of Farm Production

In view of the large and varied production of the farms of the United States, the question may well be asked, "What becomes of all these products?" The development of domestic markets has been traced briefly in connection with the expansion of agricultural production. With few exceptions, farmers have been able to sell their products, but at very different price levels. At times returns have been very high, and at the other extreme so low that products were sold at a loss or not harvested. As indicated earlier, total agricultural production is quite stable, although that of individual products is subject to considerable annual variation. The consumption aspects require further examination as a means of understanding the market and the basis of demand.

Farm Use and Sales. The farmer would be likely to answer the question of what becomes of farm products in terms of the quantities used on the farm and the amounts marketed. For him the part used at home is for family living or for further production; the part marketed represents the commercial aspects of his business. The combined marketings of all farmers make up the products which go into marketing channels.

The proportions used on the farms where they are produced vary greatly among products (Table 23). For feed crops, hay, corn, and other feed grains, the proportion is high, averaging from 58 per cent for sorghum grain to 88 per cent for hay. Pasture crops are, of course, entirely used on the farm. For wheat which is used both for food and feed, the proportion used on the farms where grown is smaller. For strictly food crops, such as fruits and vegetables, a large proportion is sold, while with nonfood crops, such as cotton and tobacco, the entire crop is sold. The parts of crops retained on the farms are used for feed to produce livestock and livestock products, for food for the farm family, and for seed.

Of the meat animals the part of production slaughtered on the farm is highest for hogs, running about 15.5 per cent and is low both for cattle and sheep (Table 24). The greater part of this use is for food for farm

families. Death losses take a considerable toll of livestock production.

Of the milk produced on farms about one-fifth is used at home and about four-fifths is sold in one form or another.

TABLE 23. AVERAGE PRODUCTION AND FARM DISPOSITION OF SELECTED CROPS, UNITED STATES, 1939–1944*

Product	Av. annual production (millions)	Amount used (millions)	Amount sold (millions)	Used on farm,† %	Sold, %
Corn, bu	2,802	2,228	574	80	20
Oats, bu	1,169	948	221	81	19
Barley, bu	330	194	136	59	41
Hay, tons	99	87	12	88	12
Sorghum grain, bu	109	63	46	58	42
Wheat, bu	895	163	732	18	82
Rice, bu	60	4	56	7	93
Dry edible beans, bags	16.5	0.5	16	3	97
Soybeans, bu	141	15	126	11	89
Flax, bu	33	2	31	6	94
Peanuts, lb	1,817	282	1,536	16	84
Tobacco, lb	1,562	....	1,562	..	100
Cotton, bales	11,933‡	....	11,933‡	..	100
Apples (commercial areas), bu	112	6	106	5	95
Peaches, bu	63	6	57	10	90
Pears, bu	28	3	25	11	89

* Farm Production, Farm Disposition, and Value of Specified Field Crops. U.S. Department of Agriculture, 1948, mimeographed.

Wheat, Production, Farm Disposition, and Value by States, 1909–44. 1948.

Fruits (Noncitrus), Production, Farm Disposition, Value, and Utilization of Sales, 1889–1944.

Tobaccos of the United States. U.S. Department of Agriculture, 1948, mimeographed.

Data for peanuts, soybeans, and cotton from 1947 Agricultural Statistics.

† Rounded to nearest whole figure.

‡ In thousands of bales.

These figures obscure the variations that occur from year to year. Crop production, as has been shown, has wide variations depending chiefly upon climatic conditions but also upon changes in acreage. Livestock production varies, but more slowly, while dairy production is quite stable. Of the products used on the farm, the quantities used as food for the farm family change but little from year to year; quantities of grains used for seed vary in line with acreage changes. Amounts used for feed are changed as livestock production is increased or decreased. Because use on farms is more stable than production, most of the changes in production are reflected in the quantities of farm products marketed.

On a basis of numbers, about three-fourths of the meat animals produced in the period 1937 to 1946 were marketed, and about one-fourth represented farm slaughter, deaths, and change in size of breeding herds. On a weight basis, farm slaughter of cattle was less than that shown, inasmuch as farm slaughter included a much higher proportion of calves than was true of marketings.

Table 24. Average Production and Farm Disposition of Selected Livestock and Livestock Products, United States, 1937–1946*

Product	Annual crop	Marketings less inshipments†	Farm slaughter	Deaths	Change in inventory
Cattle and calves (millions)	32.2	24.8	1.4	3.9	+2.1
Hogs (millions)	86.9	61.8	13.5	10.2	+1.4
Sheep and lambs (millions)	29.7	23.7	0.6	6.7	−1.3
Cattle and calves, %	100.0	77.0	4.4	12.1	+6.5
Hogs, %	100.0	71.1	15.5	11.8	+1.6
Sheep and lambs, %	100.0	79.8	2.0	22.6	−4.4

* Meat Animals, Farm Production and Income, 1924–1944. U.S. Department of Agriculture, 1947; and current releases, mimeographed.

† About 8 per cent of inshipments of cattle were imported; the remainder were shipments of domestic feeder stock and hence represented double counting. Inshipments of hogs and sheep were all domestic feeder stock.

The quantities of products sold by farmers represent the volumes which enter the marketing mechanism to be moved to places where they are wanted, to be converted into the multitude of products desired by consumers, and to be made available to them when wanted.

Types of Uses. A second point of view arises from the broad lines of use made of farm products without regard to where they are used. This point of view is that of the entire amount available, including carry-overs from previous years, the current production, and imports from other countries. Distribution of the product considers the broad groups of primary uses to which the product is put whether by the producer or by those who purchase it. This point of view gives a broader perspective of the use to which farm products are put. A considerable part of the feed grains sold by Middle Western grain farmers, for example, is fed by other farmers, such as dairy farmers in New England. Similarly the production of seed crops represents a rather specialized type of enterprise on many farms and supplies the needs of other farmers. Food uses, too, are similar whether consumption takes place on the farm or elsewhere.

For the 10-year period 1937 to 1946 domestic feed uses accounted for

more than 75 per cent of the total supply of corn and oats, 53 per cent of the barley, and 17 per cent of the wheat (Table 25). If by-products of these grains were included, the proportion used for feed would have been still larger. Domestic food uses took 39 per cent of the wheat and 88 per cent of the rice. Food grains, of course, are not entirely utilized for food purposes. The by-products go into feed channels so that little waste is involved. Exports of feed grains were negligible, but those of wheat accounted for 11 per cent of the supply and of rice 1 per cent.

TABLE 25. DISTRIBUTION OF SELECTED CROPS, UNITED STATES, 1937–1946*
(In Millions of Bushels)

	Corn	Wheat	Oats	Barley	Rye	Rice†	Soybeans‡	Cottonseed§
Total supply	3,209	1,271	1,463	376	60	17,221	198	4,947
Feed	2,516	221	1,096	202	19	209	16	697 (Feed and Seed)
Seed	13	77	100	24	7	921	18	
Farm household use	23	.....	.....	...	..	251		
Breakfast foods	10	.....	39					
Corn meal, etc	51							
Starch, sirup, sugar	109							
Alcohol, spirits	31	27	.....	73	6			
Processed	.....	499	.....	...	7	15,116	153	4,250
Other purposes	.....	.....	.....	5	..	81		
Domestic disappearance	2,753	824	1,235	304	39	16,578	187	4,947
Exports	42	138	6	8	2	233	3	
Total disappearance	2,795	962	1,241	312	41	16,811	190	4,947
Stocks, end of year	414	309	222	64	19	410	8	

* Feed Statistics. U.S. Department of Agriculture, December, 1948. Rice, soybeans, and cottonseed from U.S. Department of Agriculture, Agricultural Statistics, 1948.

† Unit = 1,000 barrels.

‡ Years, 1942–1947.

§ Unit = 1,000 tons.

Within this period the yearly variations in use of crops were extreme. The heavy accumulations of corn and wheat in the "ever-normal granary" from 1939 to 1943 were liquidated largely through feeding and industrial uses. During each of the last two years of the 10-year period exports of wheat were about 400 million bushels, and considerable quantities of other grains were exported in connection with relief feeding abroad.

Except for tobacco, cotton, flax, and broomcorn, the production of food products accounts for the major part of crop use. Fruits, vegetables, potatoes, and dry edible beans very largely go directly for food uses. As indicated above, only a limited proportion of the grain crops is used

directly for food; the greater part, as well as hay, pasture, and many by-products, is used to provide the quantities of meat and dairy and poultry products which make up a sizable part of the American diet. Countries like China and India with large populations in relation to food supplies depend to a much greater degree upon cereal crops.

Livestock and livestock products are often thought of as used entirely for food purposes. A big discrepancy occurs, however, between the weight of live animals sold and that of edible products bought by consumers. A 200-pound hog produces about 150 pounds of edible products and a 1,000-pound steer about 600 pounds. Although the differences in weight are largely converted into various usable by-products, the total slaughter weight of livestock would be much greater than total weight of meats consumed. Dairy products and eggs which go into market channels are used largely for food purposes.

The Gap between Producers and Consumers

Of the entire population of the United States less than 20 per cent live on farms as the primary producers of farm products. On the other hand, the entire population are consumers; indeed, to the extent that farm products are exported to other countries, their citizens are also consumers of our products. But the large group of nonfarm consumers have little direct contact with the farmers who supply them with products. A wide gap separates the two groups.

This gap arises from several causes: most farm products are marketed as raw materials—bushels of wheat or rice, live hogs, truck loads of sweet corn, or seed cotton. The final consumer wants a small sack of flour, or a loaf of bread, or a package of crackers; a pound of rice; a small amount of bacon, ham, pork chops, or sausage; a can of corn; a few yards of cloth, or spools of thread, or a ready-made cotton garment. Thus most products must undergo a change in form before they are ready for the consumer. Those which do not, such as fluid milk, eggs, potatoes, and fresh fruit, usually undergo some treatment, such as pasteurization for milk, candling for eggs, and grading for potatoes and fresh fruit. Further, each product is usually packaged into the limited amounts desired. Moreover, consumers are often far removed geographically from the farmer who grew the products. A simple breakfast menu may include oranges from California or Florida, bread from Kansas wheat, bacon and eggs from the Middle West, and milk from a nearby area. Further, much farm production is seasonal in character, but the consumer wants a large variety of products throughout the year.

This gap between the farmer-producer and the final consumer is bridged by a whole group of agricultural industries such as those handling

dairy products, livestock, and meat packing, cotton and cotton textiles, grain, sugar, tobacco, and wool and woolen goods.[1] Each of these groups, of course, is made up of many business concerns of various sizes and performing various activities with the product. These industries furnish the immediate market for the farmers' products and in turn provide finished products for consumption in the form and at the time and place desired by the consumer. These in-between steps, which constitute the field of marketing, are productive from the economic viewpoint because they add value to the original product.

The business concerns which operate in this marketing area are willing to buy the farmers' products because they expect that by adding their particular services they can pass on these products to consumers at a higher price and make a profit after paying their costs of operation.

Farm products are purchased by various classes of buyers and at various stages of processing. Merchants and traders buy to sell again without changing the form of the product. Processors or manufacturers buy the products at various stages to convert them into other products. The flour miller buys wheat in order to produce flour; the flour is raw material to the baker who uses it in making bread and other products. Similarly the New England dairyman buys grain and protein supplements from the Middle West in order to produce milk for the market. The most numerous class of buyers, of course, are the final consumers who use the food, fiber, or other finished products to satisfy their own wants. All intermediate groups of buyers depend upon the wants of the final consumer, who thus becomes the focal point of demand for farm products. The consumers' demands are reflected back through the various stages of the marketing process to the primary farmer producers.

Average per Capita Food Consumption

The aggregate annual consumption, domestic and foreign, of most farm products used for food purposes would approximate fairly closely the annual production, inasmuch as the carry-over from year to year is relatively small. Average domestic consumption per capita shows fairly constant amounts for many food and fiber products (Table 26). Similar figures could be shown for many other individual products. This table shows for certain products the average annual per capita consumption for the 10-year period 1936 to 1945, the amount of variation between the highest and lowest years, and the percentage which this variation represents of the average use. Wheat flour, including all the products made from flour, and potatoes are among the most stable foods in quantities used, the variation from year to year being relatively small. All meats (excluding

[1] Deane W. Malott and Boyce F. Martin, The Agricultural Industries.

poultry) and total milk were relatively stable in the amount used, but individual kinds of meat and certain dairy products had a much greater variation in annual use. The variation for both chickens and turkeys was greater than for eggs, and that for fresh citrus fruits was greater than for fresh apples. For the two fiber crops, cotton and wool, the variation in annual use was greater than for any of the food products.

TABLE 26. AVERAGE ANNUAL PER CAPITA CONSUMPTION OF SELECTED AGRICULTURAL PRODUCTS, UNITED STATES, 1936–1945*

Product	Consumption	Variation within period	Per cent of variation
Foods:			
Wheat flour, lb	156.0	16.8	10.7
Potatoes, lb	128.0	12.0	9.4
Meats (excluding poultry), lb	135.5	23.0	17.0
Beef, lb	55.9	11.6	21.8
Pork, lb	64.2	22.2	34.5
Veal, lb	8.6	4.3	50.0
Total milk, lb	802.0	178.0	22.2
Butter, lb	15.0	6.4	43.0
Ice cream, lb	12.0	6.9	57.6
Number of eggs	324.0	105.0	32.4
Chicken, lb	20.7	11.2	53.5
Turkey, lb	3.3	1.6	48.5
Sugar, lb	91.3	30.4	33.4
Fresh apples, lb	28.0	7.9	28.2
Fresh citrus fruit, lb	56.3	23.7	42.0
Fibers:			
Cotton, lb	32.0	19.3	60.0
Wool, lb	3.74	2.65	71.0

* Agricultural Statistics, 1946.

The lowest annual consumption of the products beef, total milk, butter, fresh apples, and sugar was in a war year and resulted from a small apple crop and limited supplies of other products because of war diversion. Obviously consumption cannot exceed the available supply (production, carry-over, and imports). For all the other food products shown and also for beef and total milk, the years of highest consumption were also war years, reflecting the generally higher production of that period. For most food products, domestic consumption plus exports follow production rather closely on an annual basis. The reserves of foods ready for use are normally small in relation to annual use. This situation is most marked for products that cannot be stored for long periods. The main reserves of meat supply are in the form of livestock on the farms of the country.

For grains, the reserves from harvest to harvest are held in local and terminal storage as well as on farms.

For nonfood products consumption does not follow production so closely, for the nonfood needs of consumers do not recur so frequently, nor are they so insistent. Moreover, these products, cotton, wool, and tobacco, can be stored for longer periods.

Conditions Underlying Demand

The consumption of farm products is by no means automatic. Their use like that of any other product depends upon demand which in the economic sense consists not only of the desire for a product but also of the ability and willingness to pay money for it. Several influences give rise to demand on the part of the final consumer.

Satisfaction of Wants. In the first place, a product must satisfy a want or be useful before anyone will buy it. Foods and fibers contribute to the more elementary wants and, hence, are generally desired by consumers. But demand is not for any food or any kind of clothing but for specific items. Here habit and prejudice play a part, since some individuals may have a great preference for some foods and a prejudice against others. These feelings lead to choices which represent demand even though the choices made may not contribute the most to nutritional needs.

Purchasing Power. A second basis of demand is purchasing power or income. This represents the amount of income or savings available to the individual or family for satisfying all their wants. Obviously choices are involved as to the relative importance of various desires. Some families set up a budget in which, on the basis of past experience, specific amounts of money are allocated for certain uses as food, clothing, housing, education, etc. Even then choices are necessary as to how to spend each part of the budget to secure the greatest satisfaction. It is at this point that various foods come into competition. What combination of meats, vegetables, and fruits shall be used for this meal, and what for that within the limits of purchasing power? Expanding nutritional knowledge doubtless aids in this selection. Much of the current food advertising is aimed at attractiveness and convenience of serving rather than at better nutrition.

Purchasing power involves more than the annual income or amount available for spending. It involves the physical amounts of all kinds of products which can be procured with this spendable income, hence is closely related to the prices of products. At one dollar a pound for butter or for steak, as occurred in the early postwar period, many families had to forego butter and steak and had to supply their needs with butter substitutes and cheaper cuts of meat or shift to other substitute foods. The prices of various products do not rise and fall together; hence those with

limited incomes must continually reappraise their scale of wants to secure the greatest satisfaction of their wants within their means.

Thus prices play an important part in directing the demands of consumers just as they do on the supply side in directing the activities of producers.

While demand for products is made up of the combined demands of all the buyers, it is measured in terms of the total. It involves, therefore, the size of the population, as well as the aggregate purchasing power. Changes in population affect demand not only because of changes in numbers, but also because of the occupational and age distribution.

Income Levels of Consumers. That incomes vary greatly is common knowledge. Until recently reliable information has been meager as to the distribution of incomes and the effects of the distribution upon demand for various products. Indeed much misunderstanding has existed as to relative incomes of city and farm workers. Country people read of high incomes paid to business executives in cities; they make trips to cities and see the business districts and the best residential areas and conclude that the people who live and work in such surroundings must have high incomes. Usually they do not see the less attractive areas where the laboring classes live, although they read of strikes and wage contracts to secure higher wages. City people drive out through the country, observe some nice farmsteads, broad fields of grain, herds of livestock in the pastures, and relate these sights to the retail prices they pay for meat, dairy products, and other foods. Surely farmers must be well off to produce much of their own food and to sell their products at high prices. Both pictures obviously are biased because they are incomplete.

Data on income and spending on a broad scale were made available in a Consumer Purchases Study conducted in 1936 and again in 1942 by the Bureau of Home Economics, U.S. Department of Agriculture, and the Bureau of Labor Statistics, U.S. Department of Labor. Surveys of consumer finances were made on a restricted sampling basis for 1945, 1946, 1947, and 1948 by the Board of Governors of the Federal Reserve System. The results from the two types of studies are not exactly comparable but are sufficiently similar to indicate the changes in income status from the low year of 1936, when recovery from the depression had just gotten under way, through the war and early postwar periods when incomes and prices were rising and rates of employment were high[2] (Table 27).

In 1935–1936, 94 per cent of the incomes were below $3,000 annually;

[2] The first two of these studies are based upon data from American families and single consumers. Those of the Federal Reserve System use "spending unit" as a basis. A "spending unit" consists of all persons living in the same dwelling unit and belonging to the same family, who pool their income to meet their major expenses.

the proportion in this income range decreased steadily to 59 per cent in 1947. Year by year the proportion of those in income groups under $1,000 and from $1,000 to $1,999 decreased and the proportions in the groups above $2,000 increased. These higher incomes did not reflect corresponding gains in purchasing power, however, for the prices of commodities were rising also. Based on the cost of living index an income of $2,000 in 1935–1936 had the same purchasing power as $2,135 in 1941; $2,604 in 1945; $2,825 in 1946; and $3,232 in 1947. The effort to raise wages ahead of living costs accounted for the annual rounds of higher wage demands in 1946, 1947, 1948, and 1949 by many of the labor unions.

TABLE 27. DISTRIBUTION OF INCOME IN SELECTED YEARS, UNITED STATES*
(In Per Cent)

Income level	1948	1947	1946	1945	1941	1935–1936
Under $1,000	12	14	17	20	35	53
$1,000–$1,999	18	22	23	27	30	31
2,000–2,999	23	23	25	23	20	10
Subtotal	53	59	65	70	85	94
$3,000–$3,999	20	17	17	15	10	4
4,000–4,999	12	10	8	7	5 (4,000 and over)	2 (4,000 and over)
5,000–7,499	10	9	6	5		
7,500 and over	5	5	4	3		
Total	100	100	100	100	100	100
Median income	.....	$2,530	$2,300	$2,020	$1,692	
Spending units (millions)	.....	48.4	46.3			
Cost of living index†	171.2	159.2	139.2	128.3	105.2	98.5

* 1945, 1946, 1947 from 1948 Survey of Consumer Finances. *Federal Reserve Bulletin*, June, 1948, Part II, p. 3. 1948, *Federal Reserve Bulletin*, July, 1949; 1941 from *Agricultural Situation*, Vol. 26, No. 9, September, 1942, p. 13, by Dorothy S. Brady; 1935–1936, Bulletin 723, Bureau of Labor Statistics.

† Bureau of Labor Statistics (1935–1939 = 100).

During the period shown the burden of taxation has become much heavier because of higher rates and lower exemptions. Taxation reduces the amount available for each individual's spending. Any accumulations of capital for investment or reserves must also come from income. Those in the lowest bracket were spending reserves rather than accumulating them. The lower half of income receivers in the three years 1945 to 1947 held only 16 to 17 per cent of the government bonds, savings accounts, and checking accounts, while the upper half held 83 to 84 per cent.[3]

From these figures on distribution of income and savings it is evident that a relatively small proportion of the spending units can afford to spend

[3] 1948 Survey of Consumer Finances. *Federal Reserve Bulletin*, July, 1948, Part III, p. 4.

lavishly; most must use care in spending and saving to satisfy their present and future wants as fully as possible.

Effect of Income Levels on Demand for Foods. Income levels are closely related to both the quantities and types of food consumed (Table 28). The data are for 1941 before war influences had seriously disturbed supplies. For nonfarm families higher levels of income were associated with rather sharply increasing quantities of milk, meats, eggs, vegetables, and fruits. These include the so-called protective foods which add essential elements to the diet and also provide desirable variety. Potatoes and sweets increased very little, fats were about constant, while flour and cereals and dry beans and peas declined in amount as incomes increased.

TABLE 28. ESTIMATED PER CAPITA CONSUMPTION OF FOOD AMONG NONFARM FAMILIES, BY INCOME GROUPS, UNITED STATES, 1941*
(In Pounds at Retail Weights)

Food groups	Under $500	$500–$999	$1,000–$1,499	$1,500–$1,999	$2,000–$2,999	$3,000–$4,999	$5,000 and over
Milk or its equivalent	180	299	367	381	409	435	510
Potatoes and sweet potatoes	86	118	117	119	118	114	124
Dry beans and peas and nuts	14	15	14	12	11	11	14
Tomatoes and citrus fruit	26	56	78	97	117	141	193
Leafy-green and yellow vegetables	39	56	67	78	86	95	117
Other vegetables and fruit	98	149	189	226	256	302	427
Eggs	22	32	35	38	39	40	46
Meat, poultry, and fish	74	114	136	153	170	193	265
Flour and cereals (baked goods equivalent)	281	197	179	174	175	169	198
Butter and other fats	66	60	59	60	61	63	73
Sugar and other sweets	94	90	96	94	97	97	121
Total	980	1,186	1,337	1,432	1,539	1,660	2,088

* Willard W. Cochrane, High Level Food Consumption in the United States, p. 10. U.S. Department of Agriculture Miscellaneous Publication 581, 1945. (Figures rounded to nearest whole number.)

Below the $1,000 income level the diets were inadequate, since they lacked both sufficient quantities of food and enough of the protective foods. They depended too largely upon the cheap energy-producing foods such as flour and cereals and sweets and could scarcely avoid malnutrition.[4] Above the $1,000 income level the amounts of food were

[4] Willard W. Cochrane, High Level Food Consumption in the United States, pp. 8–13. U.S. Department of Agriculture Miscellaneous Publication, 581, 1945.

generally adequate, but diets were short in the protective foods. Food consumption by farm families was likewise very inadequate in the income groups below $1,000 but somewhat better than that of nonfarm families at higher levels.

While closely related to income levels, adequate nutrition for the whole population does not depend entirely upon income. With adequate incomes, diets may still be deficient. Education as to dietary needs, the maintenance of quality of food products, and avoidance of waste all play a part.

From the standpoint of national health a high level of income is desirable as affording increased nutritional standards. From the viewpoint of demand for farm products high levels of income are likewise desirable as providing both a larger market for nearly all types of food products and particularly for livestock and livestock products which represent the more concentrated and relatively higher priced products.

TABLE 29. AMOUNT OF CROPLAND REQUIRED TO PRODUCE THE AVERAGE DIET CONSUMED BY DIFFERENT INCOME GROUPS*
(In Acres)

Net money income class	Cropland requirements for		
	All food products	Livestock products	Food crops
Under $500	1.90	1.52	0.38
$500–$999	2.13	1.77	0.36
1,000–1,499	2.31	1.98	0.33
1,500–1,999	2.54	2.23	0.31
2,000–2,999	2.83	2.53	0.30
3,000 and over	3.03	2.75	0.28
All classes	2.51	2.19	0.32

* Raymond P. Christensen, Efficient Use of Food Resources in the United States, p. 42. U.S. Department of Agriculture Technical Bulletin 963, 1948.

The relation of incomes to farmers' markets is indicated by the acres of cropland required to produce the average diet consumed by different income groups (Table 29). From the lowest to the highest income group shown the increase in cropland requirements was 58 per cent, but for livestock products it was 80 per cent, while that for food crops was reduced by 26 per cent.

That similar relationships between consumption and income apply to nonfood items is indicated by careful estimates of postwar per capita consumption under assumed full employment. Under such conditions wool consumption was estimated at 33 per cent above the 1935 to 1939 average;

cotton at 19 per cent; and tobacco at a 32 per cent increase.[5] The welfare of all phases of agriculture is thus related to the incomes of consumers as affecting the volume of products that can be sold and also the prices which may be received for them (Fig. 7).

Results of Research and Education. Research in foods and dietary needs have made great progress in recent years. The wider knowledge which has resulted has no doubt played a major part in the gradual change in per capita consumption of certain kinds of foods. Greater availability of

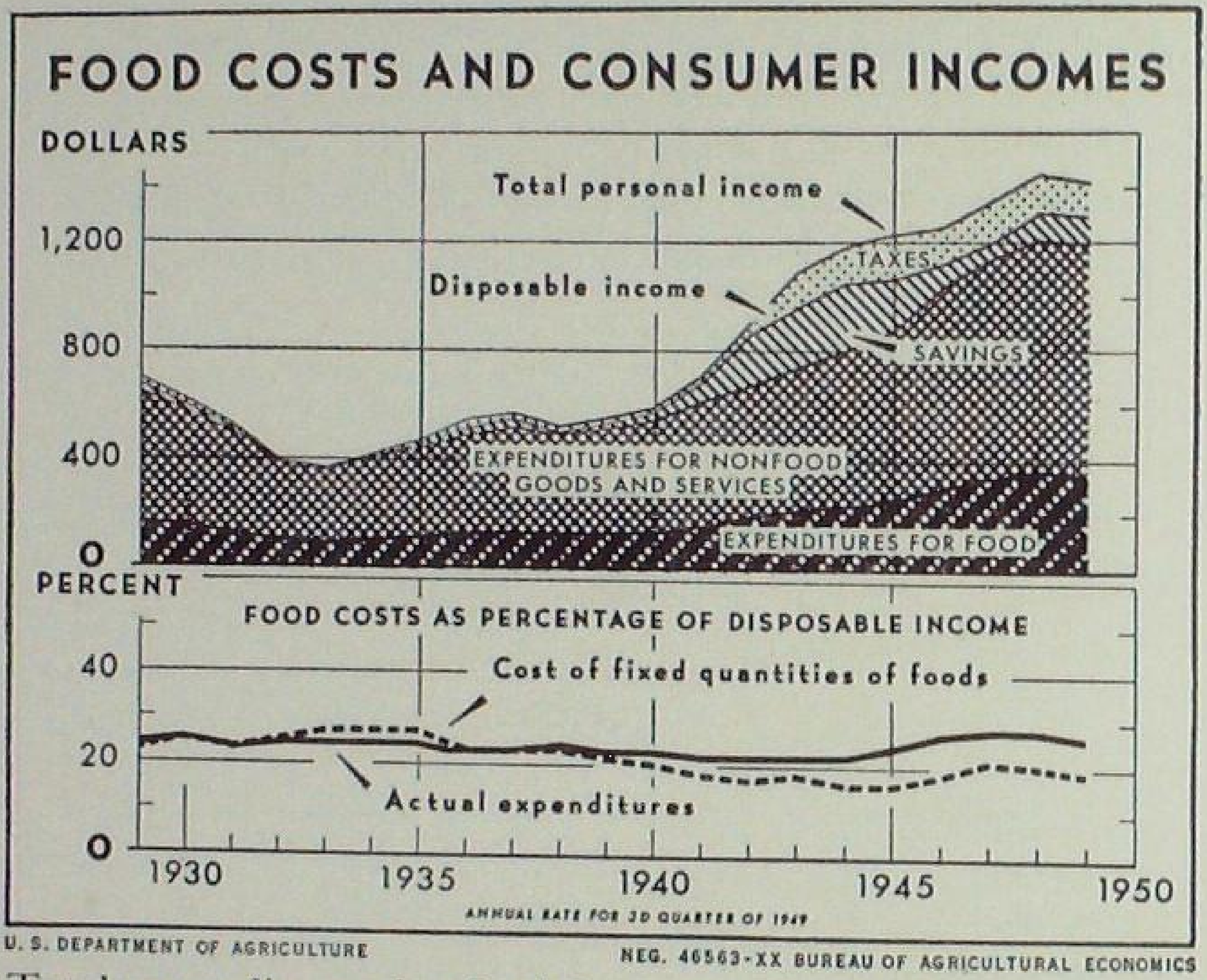

FIG. 7. Total expenditures for food increase with higher consumer incomes. The proportionate increase, however, is less for foods than for nonfood goods and services.

some foods, better facilities for preservation, a higher proportion of employed persons in sedentary occupations, and augmented purchasing power have also contributed to this result. From 1910 to 1944 per capita consumption of fruits and vegetables and dairy products increased more than 35 per cent (based on 1909 to 1913 averages); fats and oils and eggs increased about 10 per cent; meats declined about 13 per cent up to 1937 and increased rapidly since then; while grain products and potatoes and sweet potatoes declined about 25 per cent (Fig. 8). That purchasing power influenced these trends is indicated by the actual decline in consumption for each of the first four groups for several years during the depression

[5] What Peace Can Mean to American Farmers, p. 17. U.S. Department of Agriculture Miscellaneous Publication 562, 1945.

of the thirties. Diets of 1942 were superior to those of 1936, particularly in the protective foods and vitamins.[6] As knowledge of foods and dietary deficiencies become more widely known still greater improvement should result. These shifts in food consumption gradually change the picture of demand.

Population Changes. Since the beginning of our national history the population of the country has increased, but the rate of increase has declined since 1860 (Table 30). This slowing down in the rate of increase has resulted both from a decline in the birth rate and from restrictions upon

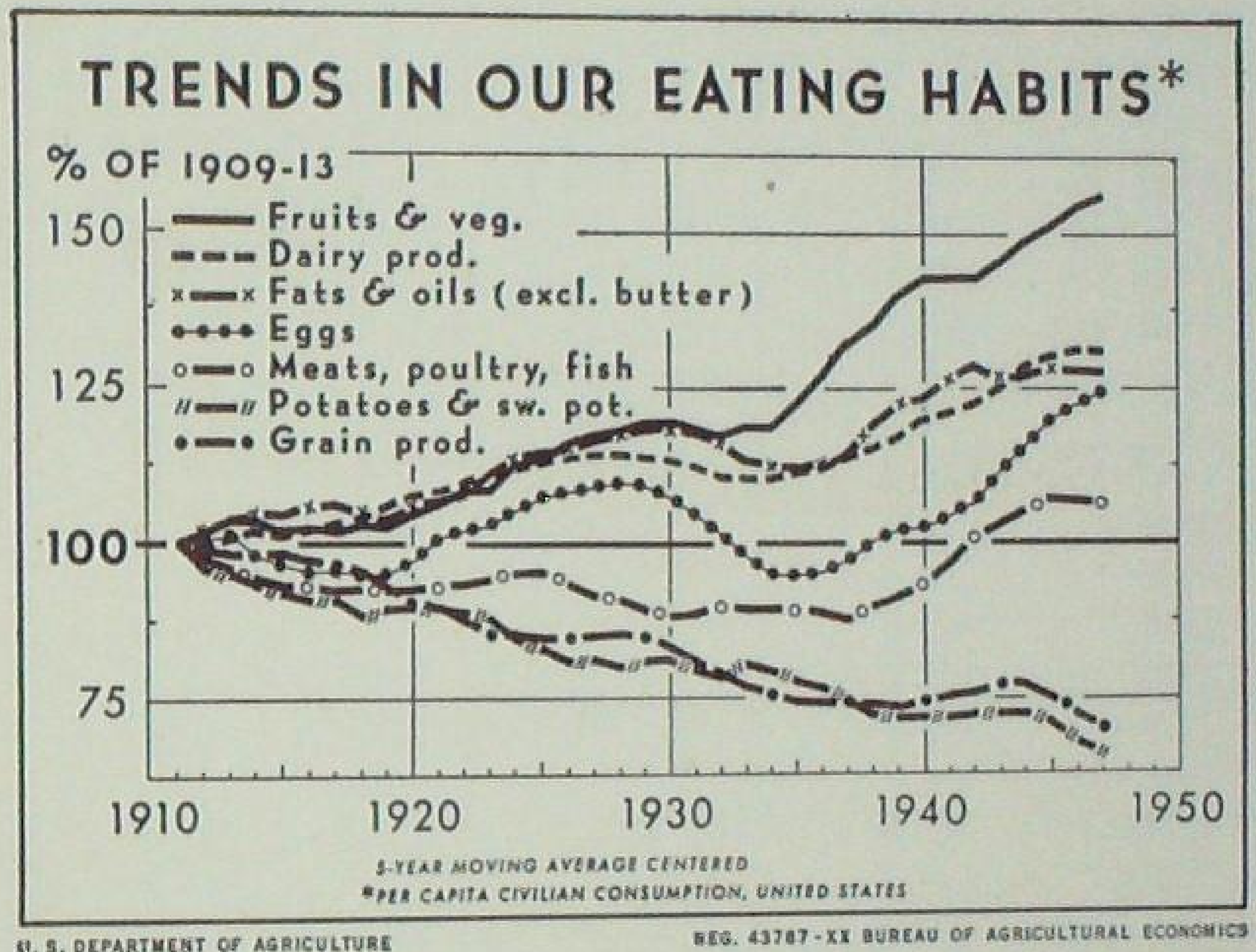

FIG. 8. Changes in our eating habits increase the demand for some kinds of foods and reduce the demand for others.

immigration. A decline in the birth rate affects both the size of the population and its composition. As fewer births occur year after year the numbers in the younger age groups represent smaller proportions of the total population, while the proportion of older persons increases.

This general trend was temporarily reversed just after World War I when birth rates were increased for two or three years. Again just preceding and in the early years of World War II birth rates were increased sharply. The peak was reached in 1947, and birth rates are again declining. The increased births above prewar numbers will add an estimated total of about 10 million to the population. In addition to the increased number of consumers, this change has created demands for all kinds of prod-

[6] John D. Black and Maxine E. Kiefer, Future Food and Agricultural Policy, p. 30. New York: McGraw-Hill Book Company, Inc., 1948.

ucts used by families with younger children. Already increased enrollments are evident in the elementary schools, and this wave will move forward, grade by grade, requiring new facilities. Such changes both in number and composition of population are reflected in the kinds of food and other products demanded.

TABLE 30. TOTAL AND FARM POPULATION, UNITED STATES

Census date	Total population* (millions)	Increase over preceding census,* %	Farm population† (millions)
1790	3.9		
1800	5.3	35.1	
1810	7.2	36.4	
1820	9.6	33.1	
1830	12.9	33.5	
1840	17.1	32.7	9.0
1850	23.2	35.9	11.7
1860	31.4	35.6	15.1
1870	39.8	26.6	18.4
1880	50.2	26.0	23.0
1890	62.9	25.5	26.4
1900	76.0	20.7	29.4
1910	92.0	21.0	32.1
1920	105.7	14.9	31.6
1930	122.8	16.1	30.2
1940	131.7	7.2	30.5
1948‡	146.6	....	27.4
1949‡	149.2	....	27.8

* Statistical Abstract of the United States, U.S. Department of Commerce, p. 5. 1947.

† 1840–1900 from A Chronology of American Agriculture. U.S. Department of Agriculture, Negative 39022. 1910–1930, Estimates of Farm Population. U.S. Department of Agriculture, June, 1946, mimeographed. 1940–1948, Census, Bureau of Agricultural Economics Series No. 12, June, 1949.

‡ Bureau of Census Series P-25, No. 40, May, 1950; and Census, Bureau of Agricultural Economics Series No. 14, January, 1950.

Accurate figures on farm population are available only since 1910. Estimates for earlier years indicate an increase from 1840 to 1910 but at a slower rate than for the total population. Since 1910 the farm population has declined as new developments have increased the productive capacity of farm workers. As the farm population shrinks in relation to the total population, the total demand for farm products which enter marketing channels is increased, but the rate of population increase is not keeping pace with the expansion in productive capacity of American farms.

The foregoing discussion of the elements of demand has been focused upon the domestic situation. Demand for farm products arising in other

countries depends basically upon the same considerations—desire for products to satisfy wants and the ability to pay for them. In practice the procedure is complicated by international trade controls, rates of exchange, and even in some cases by barter. These will be treated in a later chapter.

During the depression years of the thirties huge quantities of farm products, mostly foods, were distributed directly through relief channels to unemployed people in this country. Later the food-stamp plan was developed and, likewise, school lunches. Later, on the international scale the United Nations Relief and Rehabilitation Administration was set up to aid whole nations and, more recently, the European Recovery Program. In all these cases the recipients, individuals or nations, paid nothing or in any case less than the value received. How do these cases fit in with the nature of demand? The character of demand has not changed. The purchasing power of a branch of government was substituted for that of the relief recipients, that of the United Nations group for the recipient countries, and that of the United States government for the countries receiving aid under ERP. These governmental bodies in turn recovered their contributions through taxing their own people or by increasing their debts to be paid in the future.

Summary

From the farmer's point of view, his products are either used on the farm for food or further production or sold to provide an income. Crop utilization may be classified as to major lines of use such as feed, food, seed, and various industrial purposes. Livestock and livestock products, less the by-products and waste, go almost wholly to food uses.

Producers and consumers are separated by a wide gap in which the agricultural industries operate to comprise the field of marketing and to provide consumers with a steady flow of finished products. The annual per capita consumption of finished food products is about 1,500 pounds per year but would represent a greater amount in terms of products as they leave the farm.

The farmers income from products marketed plus the cost of the intervening service represents cost to the consumer. He is a consumer only if the products satisfy his needs and he is willing to buy and able to pay for them. Incomes of individuals and families differ greatly, and these differences are related directly to the quantities and kinds of foods used. The protective foods needed for health and desired for variety are generally the more expensive foods. Thus consumers' incomes are directly related to farmers' markets. Food patterns change over a period of years as research and education widen the general knowledge of dietary needs and as improved facilities make perishable foods more generally available.

Demand is measured in the aggregate; it expands both with the increase of population within the country and with the growth of exports to other countries.

QUESTIONS

1. What becomes of all the farm products we raise?
2. How is the gap bridged between producers and consumers?
3. What is the basis of people's wants?
4. What determines the kinds of products and how much people will buy?
5. In what ways do income problems of city people differ from those of farmers?
6. In what ways do incomes affect purchases of food products?
7. How are levels of income distributed among United States families?
8. What is meant by annual demand for farm products?
9. What effects do price-support measures have upon the demand for farm products?
10. What relation has the school-lunch program to agriculture?
11. In what ways do foreign-aid programs such as the European Recovery Program and the Military Assistance Program affect the demand for American farm products?
12. Is it the responsibility of government to see that people have an adequate diet?
13. What effect would adequate diets in this country have upon demand for our products?
14. How does population growth affect the demand for farm products?
15. Should American farmers produce for export? Who should pay for such exports?
16. How can adequate outlets for farm products be maintained?

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Chapter 7. PRICES OF FARM PRODUCTS

A picture of average annual farm production on a national scale was presented in Chap. 5 to give some notion of the total production, the relative size of its major parts, and how agriculture is like and differs from other industries. It was noted, too, that while total farm production is quite stable, production of individual items varies from year to year and that prices serve as a guide to farmers in their production.

The disposition of this total production as to where and how it is used, average per capita consumption, and conditions that influence that consumption were discussed in Chap. 6. Among these conditions price was noted also as a guide to consumers in their purchases.

How prices serve as a guide to producers and consumers, how and why prices of farm products vary, and the effects of these variations upon agriculture form the basis for the present discussion.

The Character of Prices

What Is Price? Price is the value of a product in terms of money. Money in turn is a medium of exchange. Price could be expressed in terms of commodities. This is done in cases of barter, *i.e.*, the direct exchange of one product for another. Such transactions, obviously, are cumbersome as are also those cases in which, in the absence of money, some scarce commodities serve as mediums of exchange. Money has the advantages that its value is widely understood and it can be readily exchanged for all kinds of products. By expressing the prices of various products in dollars and cents their relative values are at once described.

Spreading the Annual Supply and Annual Demand. The entire annual supply (carry-over, current production, and imports) is, of course, not thrown on the market at one time. So far as possible it must be made available throughout the year. A part of this process of spreading out the supply is performed by farmers and a part by marketing agencies. Price helps to control this flow of products. To the extent that farmers participate they lengthen the period in which they may take advantage of price variations. The farmer has little leeway with a perishable product such as strawberries for which the production season is short, and the product

must be disposed of promptly. Milk also is highly perishable, but it is produced throughout the year. After leaving the farmers' hands part of it is converted into butter, cheese, dried or evaporated products which can be stored for considerable periods. With market livestock, production, while seasonal, has considerable spread and variation occurs, too, in time of marketing depending upon weights and degrees of finish. Grains provide the greatest leeway in time of disposal for those farmers who have storage facilities. Corn, for example, is often carried over on the farm to the following summer. Some lack storage facilities and must sell at harvest time, but much of this grain is placed in storage by buyers. The up-to-date farmer not only plans his production and storage practices to have products ready for sale in seasons when prices are favorable, but watches closely the daily market reports as a guide for selling. The farmer and all other sellers who handle the product are interested in getting the highest price per unit for it.

Consumers ordinarily receive their income on a weekly, biweekly, or monthly basis. They are not interested in a year's or even a month's supply of products such as food at one time. Many products are bought on a day-to-day basis, staples probably for a longer period. Not only the final consumer but all those who store or process goods for the final consumer are interested in buying at the lowest price possible.

Retail Price per Dozen, Cents	*Av. Number of Dozens per Week*
80	0
70	½
60	1
50	1½
40	2
30	2½
20	3

Market Demand. When the consumer with a given income receives his monthly pay check, a lot of decisions must be made. How much is to go for food, rent, taxes, fuel, clothing, medical bills, insurance, a family outing, automobile expenses, education, contributions, investment or saving? Some items are relatively fixed, others are flexible. For the flexible items how are the choices made? It is a common observation that people will buy more at a low price than at a high one. This may be illustrated by a hypothetical case in which a family of three with a median income of $2,840 makes its choice regarding one food product, eggs. The schedule shown above may represent the rate of consumption in relation to price. In this illustration none would be bought at 80 cents, a few at 70 cents,

more at 60 cents, and about an average amount at 50 cents. Below this price eggs probably would replace a part of the meat in the diet, until at 20 cents the family would consume 3 dozen a week.

The market demand for this family is this whole schedule. At different prices for eggs different quantities would be bought. Market demand may be defined as the amount of a product that will be bought under certain conditions, which are usually described as a given price, a given time, and a given place. Thus the family must evaluate all the things it wants in terms of its spendable income, the prices of each of the items desired, and its measure of satisfaction from each.

A change in conditions may give rise to an entirely different demand schedule. A 10 per cent increase in income, for example, or a reduction in other expenses, or a decision to forego saving for the future would increase the spendable income available at once and a new set of choices would be necessary. In this case the demand for eggs might be increased at the various price levels; or present consumption rates for eggs might be continued and the whole increase in income be set aside for new equipment or savings. On the other hand, a cut in income because of wage reduction, a strike, illness, etc., an increase in prices of other products, or a desire to save more would make less income available for spending and call for curtailment at some point unless debt was incurred. This situation might reduce the quantity of eggs throughout the schedule or cause changes in demand for other things.

Thus the family's purchasing power and the choices made as to the use of it affects not only the food budget but its whole level of living. The wants of people always expand faster than their means of satisfying them; hence an increase in purchasing power either because of more income or lower prices of things bought brings the satisfaction of additional wants within their reach. This is why a "Dollar Day" or clearance sale attracts a crowd. A decrease of purchasing power, on the other hand, is painful and causes unwelcome adjustments.

To complete our illustration of the demand for eggs, assume that the above family is typical of 1,000 families in a village. Some of these families are larger and some smaller; some will buy more eggs at each price level and some less, but on the average we assume that they will follow the same demand schedule, except that a few will buy eggs even at 80 cents a dozen. Assume further that the eggs for this village are produced locally and that no storage facilities are present.

Market Supply. Naturally the farmers in this community are anxious to sell their eggs for the best price possible and will produce more at a high price than at a low one. The supply side of the picture may now be added to the previous illustration (Table 31). As eggs are ordinarily

marketed the farmer receives about 75 per cent of the retail price. His prices in the illustration, therefore, range from 60 cents to 15 cents. At the highest price level the producers would give their flocks the best of feed and care to secure as high production as possible; at lower levels the effort and expense put forth would diminish, and lower production would follow. Below 37½ cents some producers would decide that egg production does not pay and would reduce or sell their flocks. Others would continue because they still can recover feed cost or hope for a return of better prices. In this illustration the whole list of amounts that would be supplied at the various price levels is the supply schedule. Market supply may be

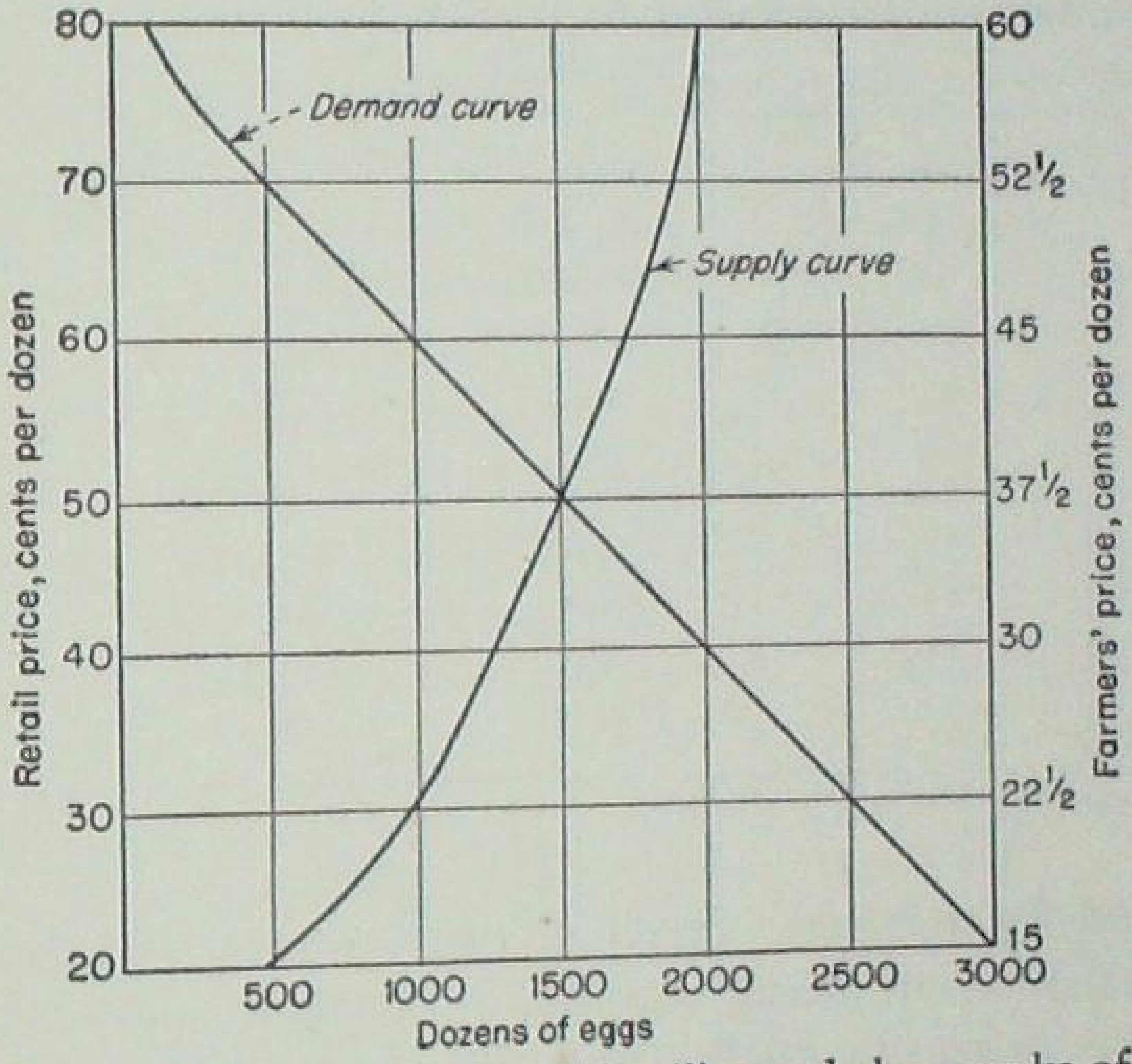

FIG. 9. The demand for eggs by 1,000 families and the supply of eggs (hypothetical).

defined as the amount that will be offered for sale under certain conditions usually expressed as a given price, a given time, and a given place.

When the demand schedule and the supply schedule are compared, it is evident that a balance is achieved at 1,500 dozen per week, bringing the farmers 37½ cents a dozen and costing the consumers 50 cents a dozen. At lower prices consumers would take more, but producers would not supply them; at higher prices the reverse would be true (Fig. 9).

In practice, of course, neither the demand nor the supply is limited to one community. Further, a part of the heavy spring production of eggs is placed in storage and made available in the fall when production is low, thereby lessening the price spread.

This general principle of balancing market supply and market demand

through price is operating continuously with all kinds of products. As long as prices are free to adjust to changes, an increase in market supply without a change in market demand leads to a lower price, and a decrease in market supply to a higher price. Likewise an increase in market demand with no change in market supply results in a higher price and a decrease in demand in a lower price. Inasmuch as market supply and market demand are both subject to frequent change, a balance as expressed in price is unlikely to be maintained for very long at a given point. In practice, however, the prices of many products are not free to make rapid adjustments.

TABLE 31. HYPOTHETICAL ILLUSTRATION OF DEMAND SCHEDULE AND SUPPLY SCHEDULE FOR EGGS

Retail price of eggs, cents	Av. amount per week, 1 family, doz.	Av. amount per week, 1,000 families, doz.	Farmers' price, cents	Av. weekly production, doz.
80	0	100	60	2,000
70	½	500	52½	1,900
60	1	1,000	45	1,750
50*	1½*	1,500*	37½*	1,500*
40	2	2,000	30	1,250
30	2½	2,500	22½	1,000
20	3	3,000	15	500

* Mean average.

Flexible and Rigid Prices. Prices of most farm products are flexible, *i.e.*, they are free to change in response to changes in supply and demand. Flexible prices normally result from the competitive action of many sellers and many buyers for the same product. Rigid prices, sometimes called "sticky" prices, are those which change slowly in response to changes in supply or demand. They come about because of a very limited number of sellers who exert a restrictive influence on supply or a limited number of buyers who similarly affect demand. Prices of industrial products are generally rigid, partly because costs are so inflexible and also because of a tendency to control the supply and to maintain the price at a certain level.

A good illustration of flexible prices is seen in the grain exchanges in which prices may change not only from day to day but even from hour to hour. These prices reflect not only the amounts actually offered for sale and current demand, but anticipated supplies as indicated by the condition of the growing crop and anticipated demand as represented by such influences as governmental action. Prices of livestock on a terminal

market reflect largely available supply and demand. Some farm prices have a measure of rigidity. For example, prices of purebred animals, hybrid seed corn, and milk when sold under contract do not adjust rapidly. Rigidities may also result from the establishment of price supports and price ceilings (Fig. 10).

Most items farmers buy have rigid prices, such, for example, as machinery, automobiles, and building materials. That rigid prices do change is evidenced by price increases in several makes of automobiles in 1948 and price decreases in 1949 and rises again in 1950. Hanging a price tag on an article does not set the price. Just after World War II a woman, looking

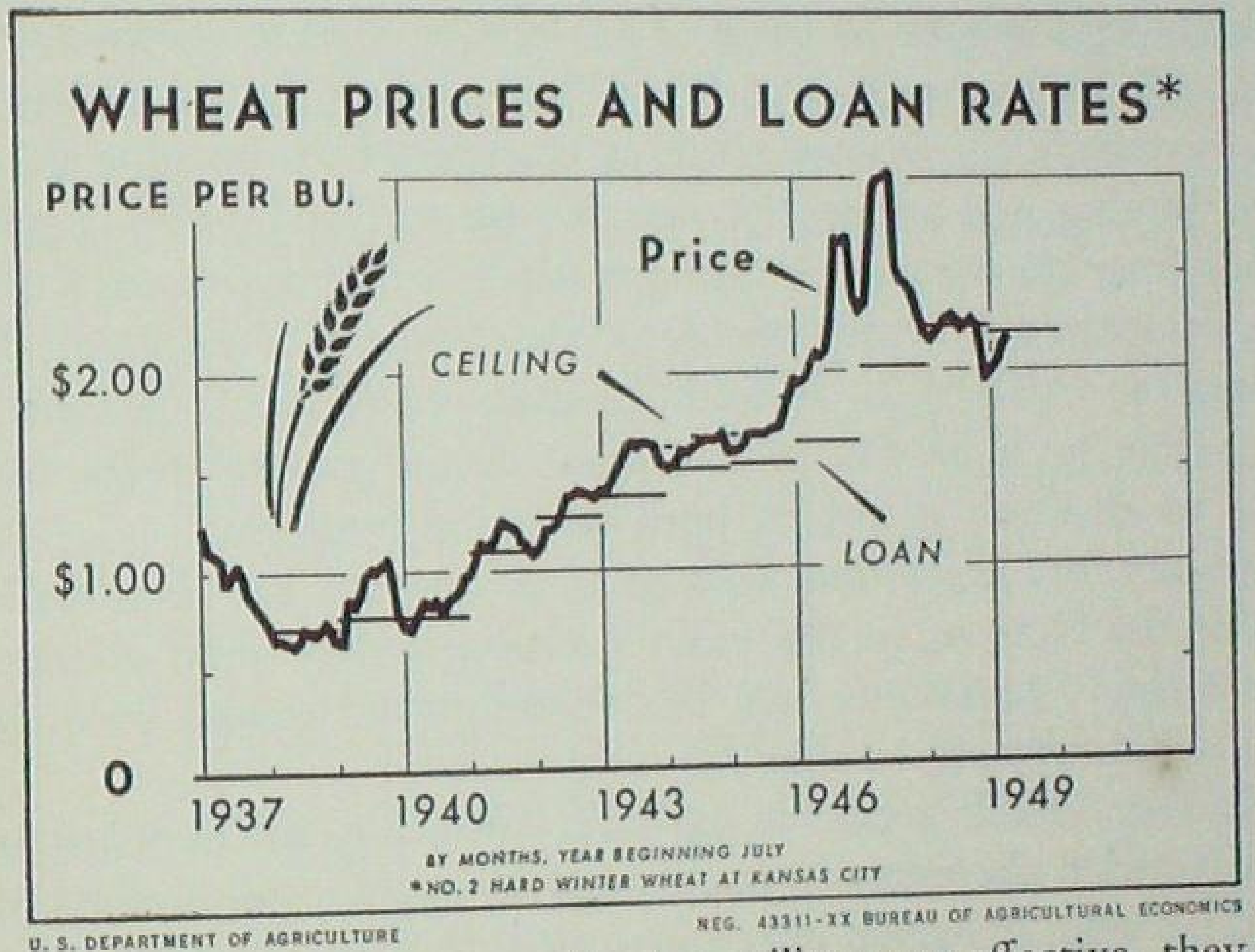

FIG. 10. When price supports and price ceilings are effective, they tend to reduce the normal flexibility in prices of farm products.

at dresses in a department store, found one marked "$18, ceiling price." It had not been sold at $18 and subsequently had been marked down to $15, $12, $10, $8, $5, and the woman bought it for $3.

This difference between flexible and rigid prices affects farmers' incomes greatly. In periods of rising prices, such as during and shortly after World Wars I and II, farmers gain because prices of things they sell rise faster than those of things they buy. In periods of falling prices they are "squeezed" because prices of their products fall more rapidly than their expenses.

The Bases of Price Changes of Farm Products

The foregoing illustrations apply to prices of individual products which change more or less frequently as supplies of them or demands for them

change. The characteristics of agricultural production and marketing create types of price changes which do not apply to most nonagricultural prices. At times during our national history the prices of all kinds of goods have made sharp increases and decreases. These changes in the general price level involve additional considerations and have far-reaching effects upon prices both of agricultural and other products.

Price Changes of Particular Products. Prices of most farm products, as indicated earlier, are flexible—sensitive to changes in supply and demand conditions. This situation is apparent to anyone who follows the market reports as announced daily by radio or as published in newspapers. The casual observer may see only the frequent and usually slight changes and attach little significance to them. To one who studies prices these daily changes reflect changes in conditions, and as they unfold over a period of time certain fairly defined patterns emerge which become guides not only for buying and selling but also for future production. From these variations four types of price changes which affect agricultural products may be designated: (1) day-to-day or short-time, (2) irregular, (3) seasonal, and (4) cyclical. In addition to these more specialized patterns is the long-time type of change expressed in the general price level and applying to all kinds of prices, both farm and nonfarm.

Day-to-day or Short-time Changes. These are the familiar market quotations. In fact, as on the grain exchanges, they may change many times in a day. Quotations may be for designated grades or weights or for all market receipts (Table 32).

During the 2-week period in January, 1940, hog prices were at a low level, daily price changes did not exceed 20 cents a hundredweight, and very little change occurred over the period. In September-October, 1948, hog prices were at a high level, on three days the amount of change exceeded $1 a hundredweight, and during the 2-week period prices worked downward materially, reflecting a longer time influence.

These day-to-day changes arise chiefly from variations in amounts received at the market and changes in demand as buyers bid more or less strongly. They may reflect changes in anticipated market receipts or in expected demand at later periods as government reports or other information points to greater or less production than was previously estimated or new developments affect demand. While buyers and sellers try to be fully informed, their estimates are usually incomplete and require frequent correction. Even the human or psychological influences enter in to affect prices. These changes obviously are of too short duration to affect production; they do, however, affect the time of marketing.

Day-to-day prices may be combined to give weekly or monthly average prices. For some purposes such averages are more useful than the daily

prices. Thus the average weekly prices shown in Table 32 were $5.32 and $5.43 for January, 1940; $27.09 and $24.62 for September-October, 1948.

Irregular Changes. Irregular price changes, as the title indicates, are irregular in occurrence, of greater than normal intensity, and usually cannot be anticipated for very long. They are caused by abnormal relationships of supply and demand. A widespread drought, like that of 1936, greatly curtails production. The outbreak of a major war affects demand, as does a business panic. The cause must be general enough to cause a definite change in supply or demand of the product. A hailstorm, while destructive to crops, is too localized to have a noticeable effect on total production. The rapid changes in hog prices which followed removal of price controls at the end of June and again at the end of September, 1946, were somewhat of this character, but of short duration (Table 33).

TABLE 32. AVERAGE DAILY HOG PRICES FOR SELECTED PERIODS, CHICAGO*

1940		1948	
Date	Av. price	Date	Av. price
Jan. 8	$5.50	Sept. 27	$28.10
9	5.30	28	27.80
10	5.15	29	27.50
11	5.20	30	26.85
12	5.40	Oct. 1	26.15
13	5.40	2	26.15
15	5.60	4	24.75
16	5.30	5	23.70
17	5.35	6	24.05
18	5.45	7	25.25
19	5.45	8	25.00
20	5.45	9	25.00

* Chicago Daily Drovers Journal *Yearbook*, 1940 and 1948.

Seasonal Changes. Of the various kinds of price changes the seasonal movements are best understood. Such changes mean that prices of most farm products are usually higher in certain months and lower in others. The pattern for any product is similar but by no means identical from year to year. Patterns for different products vary greatly, each depending upon its production and marketing season. Climatic influences are the major cause, since they determine the planting and harvesting seasons for crops and to a large degree the breeding seasons for livestock. Weather likewise encourages high egg production in early spring and high milk

production in late spring and early summer. A slack winter work schedule favors the feeding of beef cattle.

As a result of the seasonal character of production large quantities of some products become available in certain months and much smaller amounts at other times. If the product is highly perishable like strawberries, the price will be depressed until supply and demand are in balance. For less perishable products storage reduces the seasonal price spread. Part of the heavy spring production of eggs is stored for late fall and early winter use, but even so the seasonal price variation is large. The extra milk from peak production goes largely into butter and cheese for later use. Grains are most easily stored, and much storage occurs on farms.

TABLE 33. AVERAGE DAILY HOG PRICES BEFORE AND AFTER REMOVAL OF PRICE CONTROLS, CHICAGO, 1946*

Date	Av. price	Date	Av. price
June 24	$14.80	Oct. 7	$16.25
25	14.80	8	16.25
26	14.80	9	16.25
27	14.75	10	16.25
28	14.75	11	16.25
29	14.75	12	16.25
July 1	17.50†	14	16.25
2	16.00	15	25.50†
3	16.50	16	26.00
4	Holiday	17	21.00
5	15.50	18	22.50
6	16.00	19	22.50

* Chicago Daily Drovers Journal *Yearbook*, 1946.
† Price controls were removed June 30, and again on Oct. 15, after they were reimposed.

The lower points in seasonal prices encourage greater consumption and storage. The rise in seasonal prices is normally the cost of storage of non-perishable products or reflects the differences in production costs. Market hogs are higher in August than in December, but their production involves more equipment, labor, and risk. Typical seasonal price changes are shown in Fig. 11.

Farmers who have the necessary equipment and skill can adapt their production and marketing to a considerable degree to fit seasonal price patterns. To do so they need to study not only the average or normal seasonal price patterns for their products, but how these patterns vary with conditions for the particular year.

Cyclical Changes. Cyclical price changes are those which tend to follow a similar price pattern over a period of years. Such changes apply particularly to prices of livestock inasmuch as livestock production has a limited variation from year to year and is not greatly influenced by weather conditions. Some cyclical action may be found in acreages of crops, but because production depends so much upon yields, no cyclical

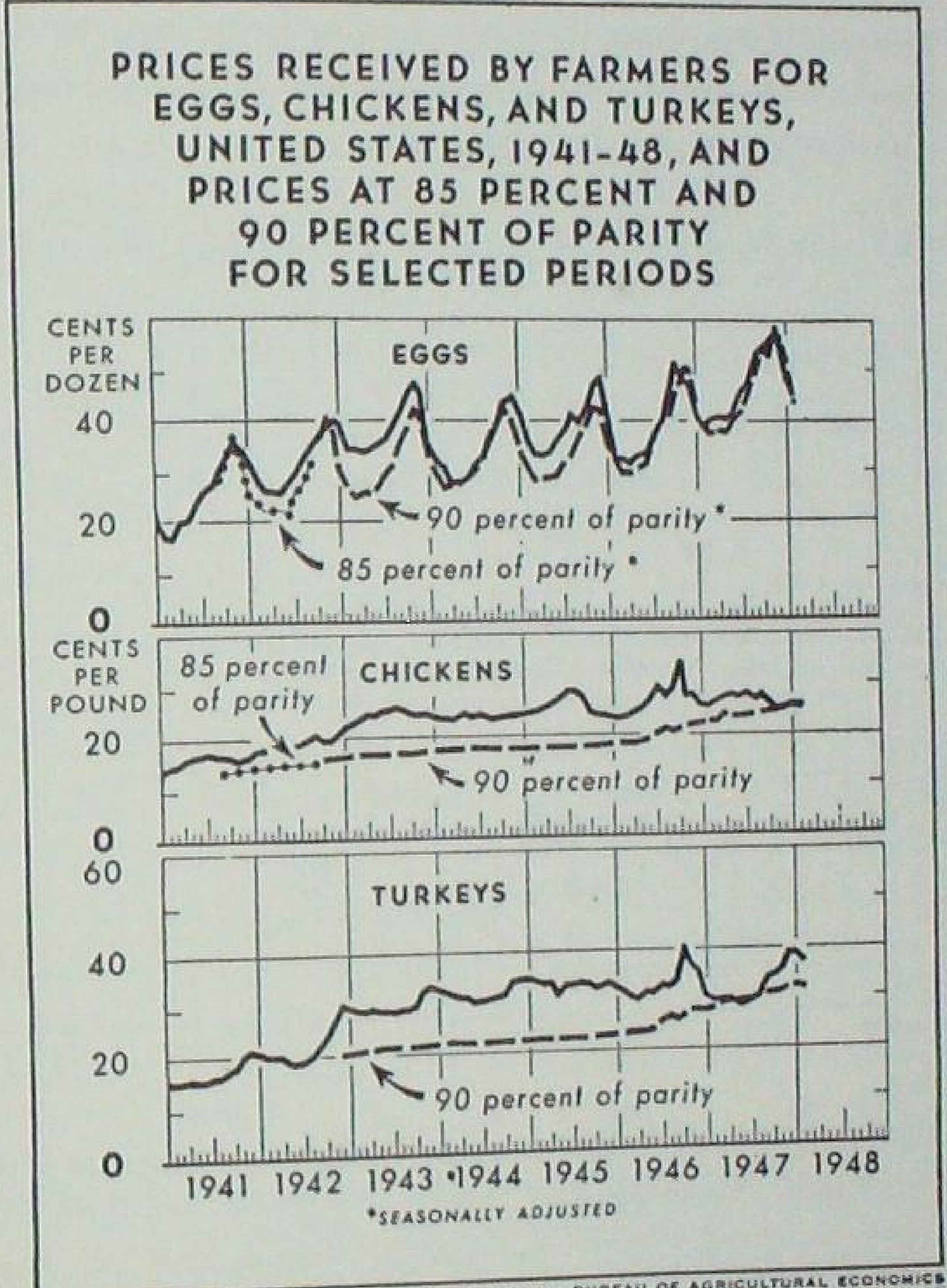

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Fig. 11. Egg prices are highest late in the year when production is low. The seasonal price pattern for chickens and turkeys is less pronounced than that for eggs.

action is traceable in crop prices. The cycles of production arise from the tendency of farmers to expand production of livestock when price relationships are favorable and to contract when unfavorable. The cycles of price follow when the expanded production goes to market forcing lower prices, and later the contracted marketings bring higher prices.

Hogs, beef cattle, and sheep have rather well-defined cycles of production and of prices. Hog-production cycles average about 4 years (Fig. 12), beef-cattle cycles about 15 years, and sheep cycles 7 to 12 years.

The length of cycle is determined by the time required to expand and contract production. Decisions to expand production result from a favorable ratio of livestock prices to feed prices. The hog-corn ratio is the best known example.

The hog-corn ratio is the number of bushels of corn equal in value to 100 pounds of hog (live weight). For the United States this figure averaged 12.3 for the 20-year period 1926 to 1945. A higher figure indicates a favorable condition for feeding since the return in the form of pork would normally exceed that from the sale of corn. Similarly a lower hog-corn ratio shows the reverse (Fig. 13).

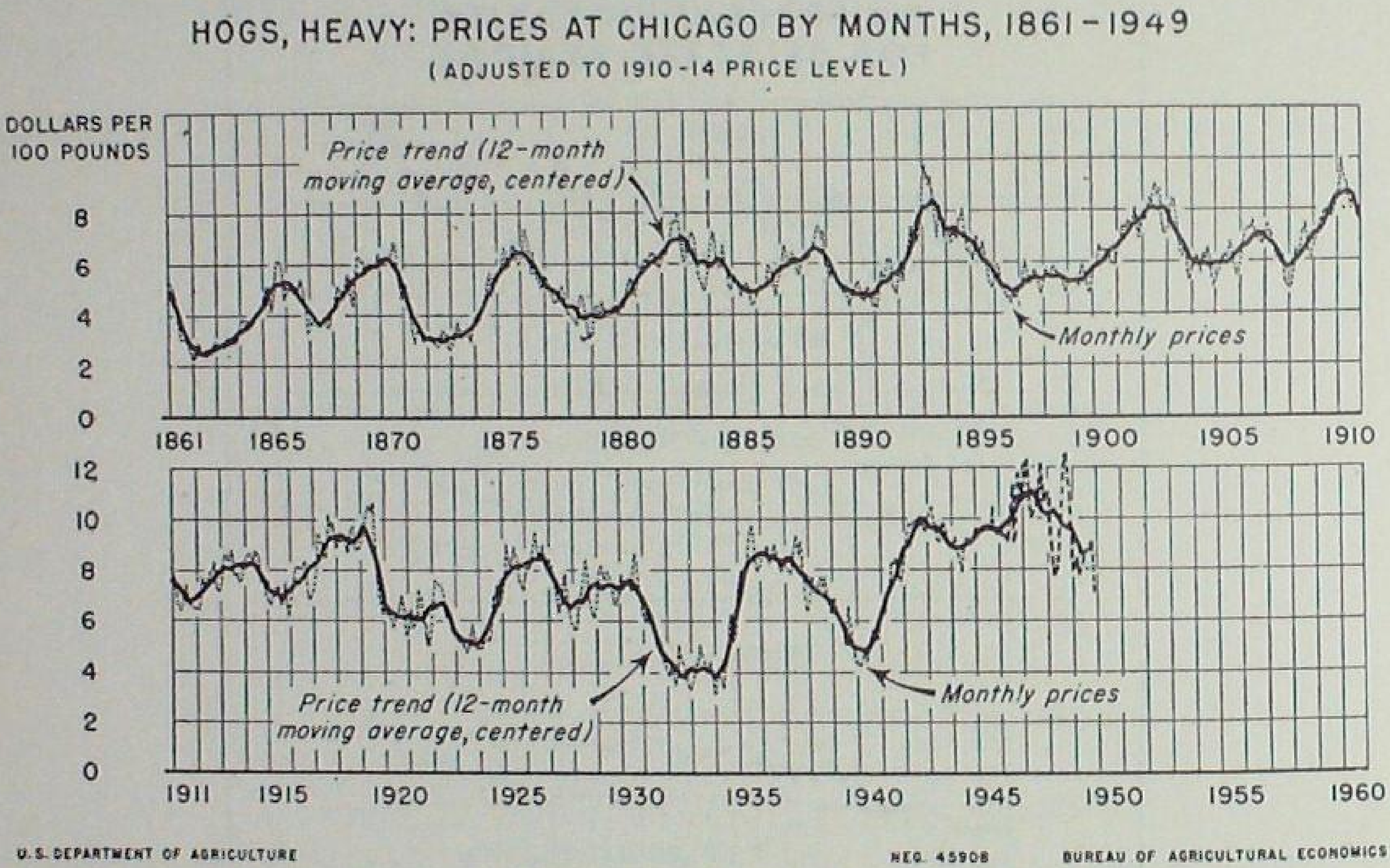

FIG. 12. Cycles in prices of hogs are clearly shown when the changes in the general price level are removed. The dotted line shows seasonal price changes.

Farmers react largely on the basis of current relationships. A favorable feeding situation induces many hog producers not only to feed hogs on hand to heavier weights, but to hold back additional gilts to expand operations. New producers also enter the field. About two years later marketings are greatly expanded and lower prices result. Some producers curtail production and others withdraw altogether, and reduced marketings two years later again raise hog prices, and the cycle begins again. The action is like that of a pendulum which swings too far in one direction, then too far in the other. The cycles vary in length as the action is influenced by the size of subsequent corn crops, changes in demand, etc.

Numbers of beef cattle on farms Jan. 1 follow rather regular cycles (Fig. 14). The cycle of market receipts is less regular because cattle are

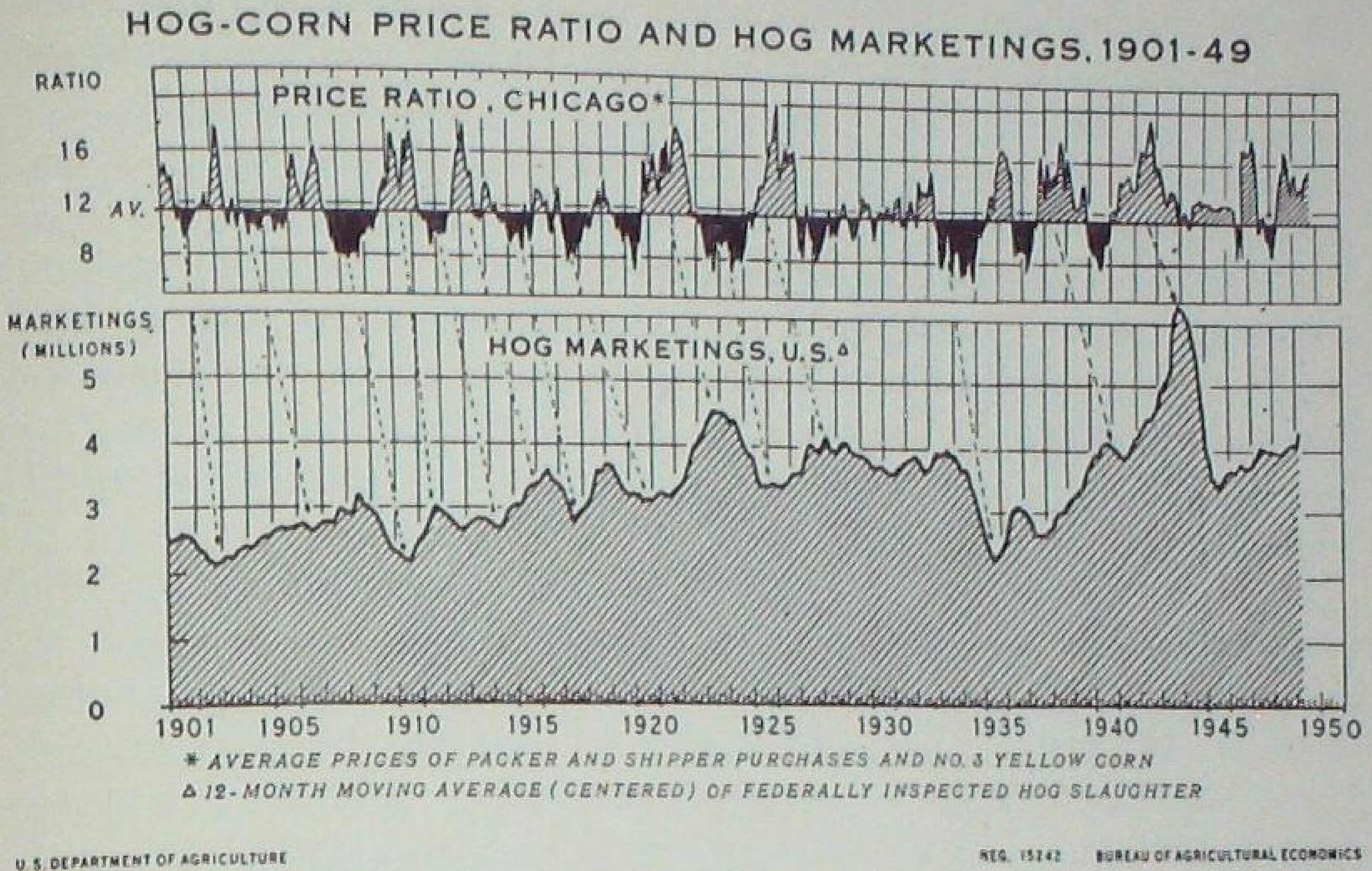

Fig. 13. Farmers' decisions regarding hog production are influenced by the current hog-corn price ratio and are reflected in marketings of hogs about two years later.

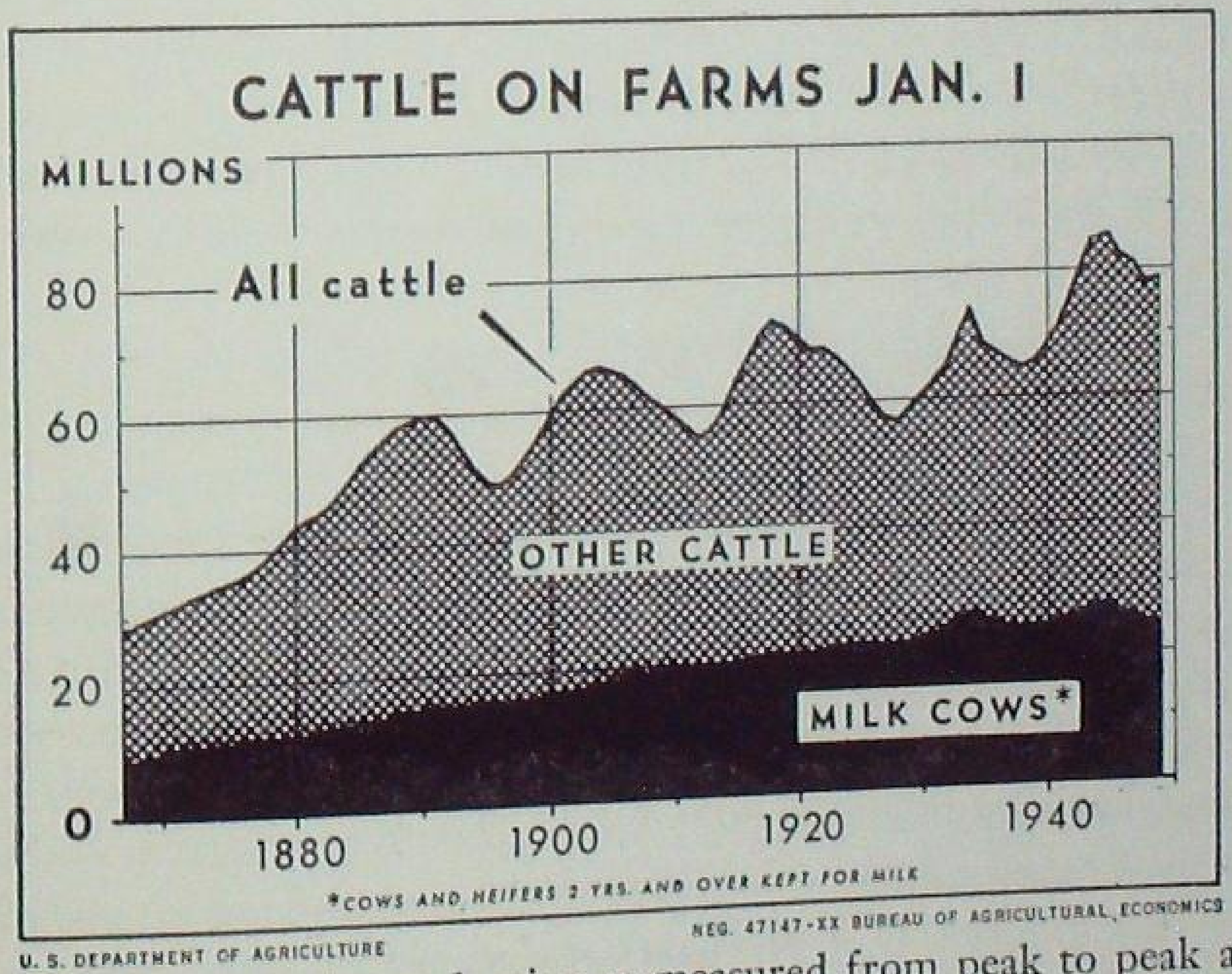

Fig. 14. Cycles of cattle production as measured from peak to peak are from 14 to 16 years, during which time herds are reduced and rebuilt.

marketed at various ages, and methods of production differ by geographical areas. As herds are expanded heifers are kept for breeding herds, and current marketings are less than current production. Conversely as liquidation takes place, breeding herds are reduced and marketings are greater than current production. These wide variations in marketings give rise to the price cycle.

Sheep production likewise follows periods of expansion and contraction, with resultant though less regular price cycles. Sheep produce both mutton and wool, the prices of which affect production. Dairy cattle numbers follow a remarkably even trend with no cyclical movement. Prices follow those of beef cattle inasmuch as animals discarded for dairy purposes go to augment the beef supply.

Farmers can use livestock-price cycles to advantage in planning their production. Although the cycles vary in length, information regarding the current position is available through outlook reports. Production plans should be based upon conditions at the prospective time of marketing rather than upon those at the time of planning. Long-time projects, such as starting beef-cow herds, may well be undertaken at the low point of the price cycle to avoid burdensome investments.

Changes in the General Price Level. The general price level most widely used, as noted earlier, is a composite of the prices of more than 900 items, both farm and nonfarm, each weighted in accordance with the total value sold within the country. Because of the magnitude of its changes the general price level is of much greater significance than changes which apply only to particular products. Prices of farm products, because of their flexible character, are particularly subject to these changes and so vary over a wider range than do the more rigid prices.

Four times in our national history this composite price level has risen rapidly to a very high peak. Each of these times was associated with a war period—the War of 1812 which coincided with the Napoleonic War in Europe, the Civil War, World War I, and World War II (Fig. 3). After each of these peaks a sharp decline occurred over a number of years which in the first three cases brought the price level to a lower point than that from which the rise started. The extent of the decline following World War II remains to be seen. The lowest points have been reached during major depression periods.

Three major causes may be ascribed to these periods of extremely rapid price increase or periods of inflation associated with wars. The first is an increase in purchasing power and a decline in amount of consumers' goods. A war requires a drastic expansion of war materials. This is accomplished in part by diverting the production of existing plants to war materials, and in part by adding new plant capacity. This expanded capacity creates more

employment. Wages are raised as an inducement to higher output. Thus purchasing power is increased, but the supply of civilian goods is greatly reduced. Unless drastic controls are applied, the increased demand bids up prices of available consumer goods.

The second cause arises from increases in the volume of money. Price was defined as the value of commodities expressed in money. Money is also a commodity and subject to supply and demand. The value of money may be expressed as its purchasing power in terms of all commodities. An increase in the volume of money, without a like increase in the supply of commodities, makes money cheaper, or in other words raises the price of all commodities since it takes more money to exchange for a given amount of goods. A reduction in the volume of money reverses the action and lowers the prices of goods.

A war period calls for higher governmental expenditures which are secured by taxation and borrowing. To the extent that these funds come from taxation or from borrowing from individuals (through sales of bonds) the effect is not inflationary since the spending power of those who pay taxes and buy bonds is reduced by the same amount as that of the government is increased. But the government also borrows huge amounts from banks, and this action increases the spending power of government without curtailment elsewhere; hence the supply of money is increased. Many business firms and individuals also borrow from banks in order to expand their facilities so as to take advantage of government contracts, and the money supply is further expanded. These actions of government, business firms, and individuals are necessary to the war effort, but they act to expand the supply of money and so push the prices of all commodities upward.

A third cause arises from an increase in the rate of turnover of money. A $10 bill in a man's wallet performs no function of exchange. If he spends it and it changes hands once in a week, it has done $10 worth of business; if spent once each working day, it does $60 worth of business. In periods of inflation when business is active a given amount of money is used to perform more than the usual amount of business, and with no increase in available goods. This, too, tends to raise commodity prices.

In a war period all three of these causes operate jointly to increase commodity prices; hence the general price level rises. The upward surge of prices became so strong in World War I and especially in World War II that strict government controls were placed on many prices to keep them from going so high as to exclude many buyers. Rationing was then introduced to divide up the limited supplies of goods more equitably. The highest prices came after the end of both World Wars I and II when controls were relaxed and goods were still in short supply.

The price decline or deflation following the war inflation reverses the situation. Gradually the war-induced shortages of goods are made up as production for civilian use goes forward, and it is no longer necessary to bid up prices to get the goods. Government borrowing from banks ceases, and revenue from taxes may be used to reduce the public debt held by banks and thus reduce the volume of money. Further, business may slow down, and both individuals and firms exercise caution and delay in buying in anticipation of lower prices, and the rate of turnover of money diminishes. All these moves are deflationary and tend to lower the general price level. If they act jointly, a precipitous decline may result.

These unusual periods of price inflation and deflation associated with and following wars not only are spectacular in the extent of price changes they create, but they also generate maladjustments which persist over many years. Between these high peaks the rate of business activity is by no means constant, as was pointed out in Chap. 4. Periods of greater than normal activity are followed by those of subnormal activity—the so-called normal business cycles—with consequent ups and downs of the general price level as economic and political happenings affect the business situation.

Federal fiscal policies greatly affect the general level of prices. The government operates a huge business; the operating budget was 40 billion dollars for the fiscal year 1949, and the public debt was 252 billion dollars. The policies adopted for borrowing for emergencies, the methods of financing the public debt, the methods of taxation, how these tax funds are spent, the controls exercised over credit and interest rates affect not only the amount of total demand for goods, but also the direction which those demands take and the general business atmosphere in which agriculture and industry thrive or mark time.

Joint Action of Price Changes. What happens when all these types of price change get in motion at the same time? All products, of course, are not subject to all the types of change, but some products are in that position. These types of change as they apply to hogs, for example, are all expressed in the day-to-day price changes, but to understand the significance of these daily prices it is necessary to understand the various types of supply and demand influences which support them. The general price level is fundamental. The broad conditions which determine the position of the general price level, *i.e.*, the composite of the prices of more than 900 items composing it, also affect the price of hogs though to a different degree than some other products. The price of hogs may vary from the general price level but follows the same general direction. But whether the general price level is high or low farmers alternately expand and contract hog production, giving rise to the price cycle. In the high part of

the cycle hog prices are carried above the general price level, and in the low part of the cycle they are carried below it. Similarly, within each year of the cycle the seasonal price changes are occurring, making hog prices higher at some times of the year than at others. If each of the three were simultaneously at a high point, the price of hogs would be very high. Similarly, if each were at a low point, the result would be a very low price. These wide extremes occur infrequently.

Prices and Farmers' Welfare

In the present commercialized stage of our agriculture the prices that farmers receive for their products and those that they pay for products bought very largely determine their net income and their welfare (Fig.

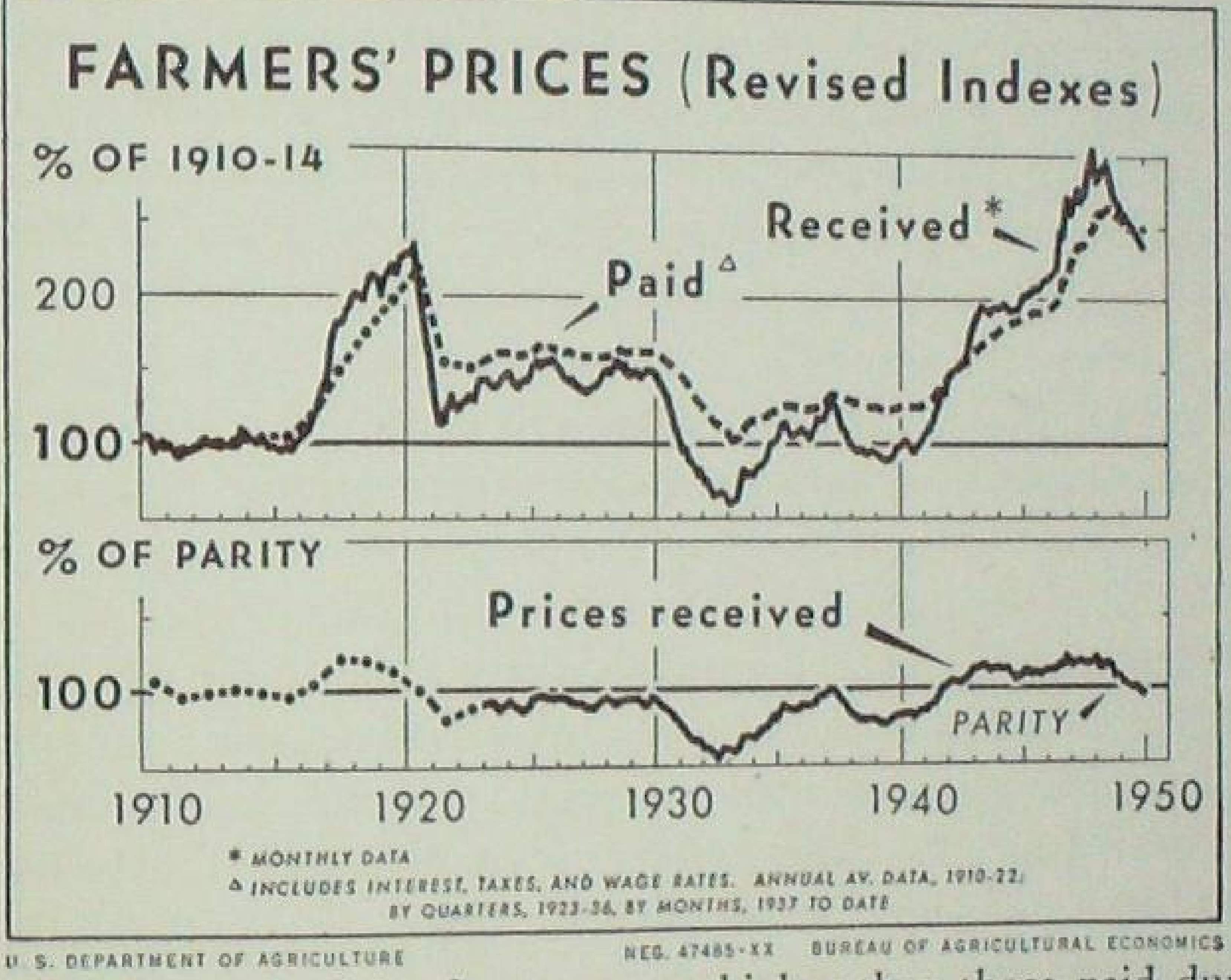

FIG. 15. Prices received by farmers were higher than those paid during and immediately following the war periods. The reverse was true in the intervening years.

15). Because of the relatively slow adjustments to price changes characteristic of agriculture, the violent changes in prices since 1914 have created unusual problems. These problems stem from very high prices as well as from very low prices, although the complaint is nearly always associated with low prices. Most individual farmers find it difficult to find fault with high prices if they are the recipients. It is true that high prices make debt payment easier, and farmers generally are in the debtor group. But high prices also stimulate an expansion in production and at the same time restrict consumption and thus lead to an unbalanced situation for which no satisfactory solution has yet been devised to operate in times of peace. Very low prices, on the other hand, do not greatly contract total farm

production, and while they favor greater consumption, they are often associated with widespread industrial unemployment, and reduced purchasing power and underconsumption result. Either extreme in prices gives rise to difficult problems. The ideal price situation both from the standpoint of farmers and from that of the general public would appear to be a middle level which would permit a free exchange of products among farmers, other producer groups, and consumers and which would remain relatively stable over a long period.

Governmental Action Affecting Prices. Because farmers, individually or as groups, have so limited influence on prices they have called upon the Federal government for assistance when adverse situations arose. Governmental activity affecting farm prices operates in three general directions. One is the *Agricultural Outlook* of the U.S. Department of Agriculture in cooperation with the state colleges of agriculture, through which information on the present and prospective general economic situation and demand and supply conditions for all kinds of farm products is assembled and disseminated as a guide to farmers in production and marketing and in making such adjustments as are under their control. A second consists of the various governmental fiscal policies which affect the general price level and through it agricultural prices. The effects to date are diverse because the policies used have not been consistent. How far such policies might be used to direct the economic life of the country remains to be seen.

The third type of activity is direct governmental action. This is the type ordinarily demanded by farmers, and the attempts at solutions through influencing prices have taken many directions. The tariff acts of 1921 and 1930 tried to restrict imports of farm products. The McNary-Haugen Bills of 1927 and 1928, which were vetoed, sought to dump our surpluses on foreign markets. Under the Agricultural Marketing Act of 1929 the Federal Farm Board undertook market reorganization and later embarked upon the ill-fated stabilization operations for wheat and cotton. In 1933 the Agricultural Adjustment Act provided for production controls and benefit payments supported by processing taxes as a means of attaining parity prices. In 1936, under the Soil Conservation and Domestic Allotment Act, the emphasis was shifted to conservation and payments were made from the Federal treasury. The Agricultural Adjustment Act of 1938 broadened the application, added marketing controls, and set up the "ever-normal granary" to assure adequate reserves. During World War II price ceilings, price floors, and subsidies were used to control, support, and encourage production of individual farm products, and the Stabilization Act gave protection against an early postwar price drop. The Agricultural Act of 1949 continued the high level of price supports

for some products and raised them even higher for others through the application of a new parity-price formula.

Out of this background of 30 years of trial and experience some basic assumptions have developed. (1) The country is committed to and farmers expect some sort of governmental guarantee as protection against the violent price changes to which agriculture is so sensitive. (2) The price goals sought through legislative action are based upon relative and not absolute levels. (3) Funds for these purposes will be supplied from the Federal treasury, *i.e.*, any benefits to agriculture will be paid for by all the people through taxation.

This last assumption is significant in regard to various proposals for agricultural legislation. In a democracy no group can long hold a selfish advantage at public cost which is not in the interest of the country as a whole. It is unlikely that taxpayers as a group will be willing to support a program which confers unusual advantages upon the 20 per cent of the population engaged in farming. Support for such a program sooner or later would be curtailed or eliminated even though the production of the special group is essential. They might, however, be willing to support a "modest" program.

Parity Prices. Parity is the magic word by which agricultural well being is measured and to which farm price goals are tied. Parity has provided the basis for computing benefit payments to farmers since 1933 and for wartime ceiling and support levels. As defined in the Agricultural Adjustment Act of 1938, "Parity . . . shall be that price . . . which will give to the commodity a purchasing power with respect to articles that farmers buy equivalent to the purchasing power of such commodities in the base period." Until 1950 the base period for most commodities was August, 1909, to July, 1914, the 5 years before World War I. The farm price for a product for this period as computed by the U.S. Department of Agriculture was multiplied by an index which measures price changes, since the base period, of goods that farmers buy, interest, and taxes. For example, the price of wheat in the base period was 88.4 cents a bushel; the index of commodity prices, taxes, and interest in May, 1949, was 245 per cent of 1910 to 1914. The basic wheat price, 88.4 cents, times the index, 245, gave $2.17 as the parity price of a bushel of wheat on May 15, 1949. A bushel of wheat at $2.17 would pay for the same amount of goods, interest, and taxes as a bushel of wheat in the base period.

The use of parity raises two questions: How well does the parity base fit present conditions, and what proportion of parity is satisfactory? Most persons are agreed that the 35-year old base no longer fits. During this period the methods of production have changed greatly, reducing crop costs relative to those of livestock. Demands for products have also

changed, further changing relationships of products to each other. In the Agricultural Act of 1949 the parity concept was modernized to become effective in 1950. The old (1910 to 1914) relationship between farm products and commodities, interest, and taxes was retained, but the relationships among farm products were related to their respective market prices during the preceding 10 years.

The new parity formula would be figured as follows for Jan. 15, 1950. The average price for milk, wholesale, for the 10-year period 1940 to 1949 was $3.49 per 100 pounds. The average of the index of prices received by farmers for this period was 202. Dividing the price of milk by the 10-year average of the index results in an "adjusted" base price of $1.73 for milk, wholesale. The new parity index has been revised based on average purchases per farm during the period 1937 to 1941. The new index of prices paid includes prices of such purchases, interest, taxes, and farm wages. This index for Jan. 15, 1950, was 249. The parity price for milk for Jan. 15 was the "adjusted" base price of $1.73 times the index of prices paid of 249, or $4.31 per 100 pounds. The new formula is more up-to-date since each year uses the previous 10-year average. Gradual step-down adjustments are provided when the new parity is more than 5 per cent below the old.

The second question has had many answers. During the thirties crop loans ranged from 52 to 75 per cent of parity; in 1941 they were raised to 85 per cent, and in 1942 to 90 per cent with higher rates for cotton. The Act of 1949 brought a new and somewhat higher parity base with some fixed supports at 90 per cent of parity and others within a range of 60 to 90 per cent. Some maintain these proportions are inadequate and clamor for a full 100 per cent of parity. To maintain that level, or even a 90 per cent level with the passing of emergency war and postwar demands, would surely lead to controls on production and marketing, a freezing of the production pattern, and a high degree of regimentation of farmers. Is this situation and the loss of freedom of action which it involves worth the price guarantee, and is this the best means of getting the security desired?

Summary

Price, the expression of values in monetary terms, is the focal point about which much human activity centers. In a broad but definite way price directs the production plans of farmers, their time and method of marketing, and the demands along the marketing chain as well as those of the final consumers. The interests of the sellers and buyers meet in the daily market transactions which serve to establish the levels of prices and to regulate the flow of goods.

Agricultural prices are characteristically flexible compared with the rigidity of prices of industrial products. This flexibility coupled with production practices gives rise to price patterns peculiar to farm products. These are registered in price variations from day to day which on a daily basis mirror the minor changes of supply and demand conditions. Occasionally unusual conditions create irregular price changes of unique character. The pattern of daily prices continued month by month develops into a further pattern of seasonal prices for various products reflecting the periods of heavy and light marketing. Over a series of years livestock prices develop a cyclical pattern as alternate expansion and contraction of production is followed by alternating periods of larger and smaller market receipts.

Basic to the price structure is the general price level, the net effect of general economic conditions on all commodity values. Its ordinary gyrations record the effects of business cycles, and the extraordinary ones the seriously disturbing influences of war periods with their long train of adjustments. The rapid changes during recent years in the general price level as a result of wars and depressions, the sensitivity of agriculture to these changes, and the difficulties in adjusting agricultural production so rapidly have led to various attempts at greater stability for agricultural prices. Such attempts have culminated in legislation designed to tie agricultural prices more or less closely to the general price level or rather to that part of it represented by farmers' expenses through use of the parity-price concept. The need for greater price stability in agriculture is now quite generally accepted, but as yet politics and economics after 30 years of effort have not agreed upon the magic formula for its implementation.

QUESTIONS

1. Define price, market supply, market demand.

2. How do prices of farm products differ from those of industrial products?

3. What types of price changes occur with farm products?

4. Define and illustrate each type. What causes each type?

5. Which of these types are general and which are peculiar to prices of farm products?

6. Can more than one type operate at the same time?

7. Which of these types can a farmer use as a guide to his production? To his marketing?

8. Can prices of farm products be stabilized to the same extent as industrial prices? Why or why not?

9. On what basis is the current parity concept calculated?

10. What kinds of artificial controls were applied to prices during World War II? Why?

11. What is the consumer's interest in prices?

12. What courses do prices generally follow in periods of inflation? Deflation?

13. What population groups gain during each of such periods? What groups lose?

14. List governmental measures undertaken to aid prices of farm products?

15. How effective have they been?

16. May prices of farm products be too high as well as too low? Why or why not?

EXERCISES

1. Chart daily local farm prices for selected products for one month. Average these prices by weeks and for the month. Note how daily fluctuations are averaged out.

2. Chart average monthly prices of a number of major farm products. Which of these show definite seasonal variations? (Use the *Agricultural Situation* of U.S. Department of Agriculture or similar sources for monthly data.)

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Chapter 8. MARKETING OF AGRICULTURAL PRODUCTS—SCOPE, SERVICES, AND AGENCIES

Marketing, as applied to agricultural products, consists of all the processes and services used in moving the product from the producer to the final consumer. It includes not only the physical movement to the point where the product is wanted, but also putting it into the form and amount desired and having it ready at the time it is wanted.

From small and localized beginnings the marketing organization has grown into a vast and complicated structure; in fact it has grown into a series of structures associated with different kinds of products. The facilities and processes needed to make a can of milk ready for final consumers differ greatly from those needed for livestock, or fruits and vegetables, or grains, or cotton, or tobacco. Yet all these channels which have been developed for certain types of products have many features in common.

The historical development of marketing in the United States has been influenced by the commercialization of agricultural production, the growth of industrial centers with concentrated populations, often far from producers of raw materials, technological developments in the use and preservation of farm products for food and industrial uses, growth of transportation facilities, and export demands. Among these influences transportation has been very important in shaping the structure of marketing organizations. In the early decades of our national history the movement of products was limited largely to water routes, driving livestock overland, and short overland wagon hauls. The advent of the railways which connected the larger cities contributed to highly centralized markets and to systems of distribution in those centers. During the last three decades the motor truck and hard-road system has tended to decentralize the marketing structure.

Coincident with the growth of markets and marketing organizations was the shift of home industries to factories. Less manufacturing was done on the farm, as for example selling whole milk or cream instead of butter, and less preparation on the consumer's part as purchases were made of

bread, wrapped and sliced, instead of flour, and ready-made garments instead of dry goods. Thus the field of marketing was broadened.

A distinction has been drawn in previous chapters between production and marketing. This distinction is commonly accepted by farmers inasmuch as with few exceptions they do not perform the operations included in marketing. They do recognize, however, the close relationship between production and marketing since their production is regulated to a considerable extent both in kind and amount by their estimates of what the market will take, and their incomes are measured by the amounts sold and the prices received.

The economist makes no such distinction since he considers not only growing the raw material, but converting it into the form desired and making it available when and where it is wanted as production. The consumer agrees with this point of view because to him the live animal, the bushel of wheat, or the bale of cotton which the farmer sells is useless until other processes are added. Even products in consumable form, like fresh fruit or eggs, must usually be divided into convenient amounts and often stored until wanted.

Our introduction to marketing will be general rather than specific, giving attention in this chapter to the scope, services, and agencies involved; in the following chapter the costs of marketing will be discussed.

The Scope of Marketing

The agricultural production of the country is very diverse. The Crop Reporting Board of the U.S. Department of Agriculture lists 52 harvested crops, whose production is handled in many ways and measured in many kinds of physical units. Livestock and livestock products add many other kinds of products. All of these are measured in terms of tons, bushels, gallons, hundredweight, pounds, quarts, etc. Data showing average annual volume of production for the major products and the part sold from farms were given in a previous chapter (Tables 19 and 20).

Because of their diverse character the only common denominator for all these products is that of value. Cash receipts from farming for the United States for 1932, 1940, 1944, and 1948 show the costs of raw materials as they enter the marketing system and also the cash incomes of farmers, under widely different price levels (Table 34). In 1932 cash receipts were at the lowest point of the depression years and totaled less than 5 billion dollars. The year 1940 was representative of the prewar period with receipts of 8⅓ billion dollars. The increased production and higher prices of the war period are illustrated by the year 1944, when receipts were a little more than 20 billion dollars. The postwar peak of prices coupled

TABLE 34. CASH RECEIPTS FROM SALES OF FARM PRODUCTS FOR SELECTED YEARS, UNITED STATES*
(In Millions of Dollars)

	1948	1944	1940	1932
Major groups				
Major grain and oil crops	$5,585	$2,995	$1,132	$422
Cotton	2,492	1,497	647	461
Tobacco	975	689	241	115
Truck crops	1,188	932	378	233
Fruits and nuts	1,174	1,395	443	327
Other crops	2,070	1,531	629	439
All crops	$13,484	$9,039	$3,470	$1,997
Meat animals	$9,359	$5,720	$2,397	$1,159
Dairy products	4,433	2,949	1,516	986
Poultry	3,071	2,306	809	561
Other	198	224	151	44
All livestock and products	$17,061	$11,199	$4,873	$2,750
Crops and livestock	$30,545	$20,238	$8,343	$4,747
Individual products				
Major grain and oil crops:				
Wheat	$2,377	$1,200	$428	$200
Corn	1,139	615	387	110
Soybeans	535	360	42	6
Oats	320	166	58	31
Peanuts	223	152	51	15
Barley	247	140	42	14
Rice	173	111	40	15
Dry edible beans	157	106	41	18
Flaxseed	308	76	34	9
Grain sorghums	106	69	9	4
Total	$5,585	$2,995	$1,132	$422
Cotton:				
Cotton lint	$2,140	$1,296	$564	$419
Cottonseed	352	201	83	42
Total	$2,492	$1,497	$647	$461
Tobacco	$975	$689	$241	$115
Hay	314	203	76	75
Potatoes	566	433	154	90
Sweet potatoes	46	56	18	18
Sugar beets	97	77	56	48
Truck crops	1,188	932	378	233
Fruits:				
Oranges	$178	$323	$91	$79
Apples	218	270	87	76
Grapes	118	212	43	26
Peaches	119	154	38	17
Grapefruit	28	93	15	16

TABLE 34. CASH RECEIPTS FROM SALES OF FARM PRODUCTS FOR SELECTED YEARS, UNITED STATES.* (*Continued*)

	1948	1944	1940	1932
Pears	$61	$63	$17	$7
Strawberries	102	49	34	30
Lemons	34	48	25	20
Prunes	33	44	13	13
Other fruits and tree nuts	283	139	80	43
Total fruits and nuts	$1,174	$1,395	$443	$327
Meat animals:				
Hogs	$3,728	$2,813	$836	$445
Cattle	5,223	2,604	1,381	621
Sheep	408	303	180	93
Total meat animals	$9,359	$5,720	$2,397	$1,159
Dairy products:				
Milk	$3811	$2,412	$1,148	$717
Butterfat and butter	621	537	368	269
Total dairy products	$4,433	$2,949	$1,516	$986
Poultry:				
Eggs	$1,857	$1,337	$465	$324
Chickens (including broilers)	923	745	256	189
Turkeys	255	199	78	38
Other poultry	36	25	10	10
Total poultry and eggs	$3,071	$2,306	$809	$561

* Data for 1932 and 1940 from Cash Receipts from Farming, U.S. Department of Agriculture, 1946; data for 1944 from *The Farm Income Situation*, February and April, 1946; data for 1948 from *The Farm Income Situation*, June, 1949.

with high production came in 1948 when receipts were 30.5 billion dollars. If receipts for these years are reduced to the common price level of 1910 to 1914, they will represent fairly well the changes in volume of products marketed. On that basis receipts in billons of dollars were 7.3 in 1932, 8.5 in 1940, 10.4 in 1944, and 10.6 in 1948.

The data given represent the relative values of the major products marketed from American farms. In the years shown livestock and livestock products made up 55 to 58 per cent of the total and crops 45 to 42 per cent. Income from dairy products exceeded that from cattle in three of the years and was second to cattle in the last year. In the livestock group income from hogs was in third place and all poultry a rather close fourth.

Income from sales of crops was largest for cotton, followed by wheat, corn, tobacco, potatoes, soybeans, hay, and oats. Beyond that point the relative positions are less consistent. Feed crops enter the marketing chan-

nels to a less extent than nonfeed crops because a considerable part is fed on the farm where produced.

To these values of domestically grown products should be added the values of agricultural products imported. These amounted in billions of dollars to 0.67 in 1932, 1.28 in 1940, 1.82 in 1944, and 3.15 in 1948. The combined values of products sold from our farms plus those of imports represent but the starting point in the marketing process. The final products are, of course, very numerous and go to serve a multitude of purposes. No figures are available as to the value added in the marketing process for all products. Such figures for representative food products and a few other products will be examined in a later chapter in connection with marketing costs. What happens to all these farm products after they enter the marketing channels?

Marketing Services

What happens to farm products after they leave the farmers' hands varies greatly with the kind of product; yet, as indicated earlier, most products go through a number of services or functions which are similar in character but quite diverse in method. What should be included as essential marketing services is a mooted point; some authors list only a few, while others break down some of these into additional services. The essential services or functions may be listed as follows: buying and selling; assembling; transporting; sorting, grading, and standardizing; inspecting; processing; packaging; storing; financing; risk-bearing and insuring; and distributing.

Buying and Selling. Buying and selling obviously are the two sides of a single transaction, so should be considered together. They involve an agreement on price, a transfer of title, provision for time and place of delivery, and a method of payment. Between the farmer-producer and the final consumer a product may be sold one or many times; if once or few times it is said to have a short marketing chain and if many times, a long marketing chain. The farmer's primary interest is in the first transfer for that determines his income; the consumer's interest is in the last transfer as affecting his cost of living; the in-between owners endeavor to make a profit from whatever service they supply. Buying and selling is most effectively performed when both parties are fully informed as to the supply and demand conditions for the product as well as to their individual needs and outlets. The recent trend in marketing is toward larger organizations, each covering a broader area, thus reducing the number of transfers necessary.

Assembling. Assembling is of two kinds: one is the bringing together of smaller amounts of a product for greater convenience and economy in

buying, shipping, or processing; the second is the concentration of various products for the convenience of buyers. The first kind may occur at local points, as when many farmers in a community haul their wheat to a local elevator, or a milk truck makes daily trips to pick up larger or smaller amounts at a number of farms, or a livestock shipping association sends its trucks to several farms for market stock. The elevator operator can then ship by carlots, the milk truck arrives fully loaded, and the shipping association ships full trucks or cars of one kind or even of one grade of livestock. In each case the cost is reduced because of handling in larger amounts. Similarly assembling is employed at central markets or large processors. Thus a flour miller or exporter requires the shipments from many elevators to secure the volume needed; a big milk distributor receives many truck loads; and a packing plant receives shipments of livestock from many sources. As a rule farmers operate relatively small units and produce a variety of products of different qualities. The production of many farmers is necessary, therefore, to secure adequate amounts of the kind and quality of products desired.

The second kind of assembling occurs most commonly in the distribution of finished products. A wholesaler buys from many processors to have on hand the goods wanted by retailers, and retailers, in turn, provide a wide variety of foods and other farm products to supply the demands of consumers.

Either kind of assembling involves expense. People must be employed and equipment provided. This expense is a part of the marketing cost and results in a lower amount paid to the producer, or a higher price to the consumer, or both.

Transporting. Transporting, or the physical movement of products between points during marketing, is necessary for all products sold. As pointed out earlier, the centralized market organization was developed in connection with railway transportation. Because of its greater flexibility, truck transportation points toward decentralization. As a means of marketing, trucks are better adapted to handling small shipments because they can be loaded on the farm, time and route of travel are flexible, they often reduce damage because of less handling, and they are faster than railways for short hauls.

Nearly half the farms in the country are equipped with trucks or trailers which enabled farmers in 1947 with their own equipment to move 45 per cent of the tonnage of products sold from the farms to initial markets. Hired trucks accounted for 33 per cent of this hauling and buyers' trucks for 22 per cent.[1] Beyond the initial markets, especially for long hauls of

[1] Donald E. Church, Transportation from Farms to Initial Markets. *Agricultural Economics Research*, Vol. I, No. 2, April, 1949, p. 51.

bulky or perishable products, railways still play an important part. Inland waterways carry some grain, and ocean steamships carry export products. Air traffic holds promise for perishable products of high-unit value.

Many products are transported several times at various stages as they move to concentration or processing points and the finished products are distributed. To be adequate transportation must provide facilities for prompt and convenient handling at terminals, plenty of capacity, care for products enroute, speed of movement in line with perishability, and performance at reasonable cost.

Transportation has permitted the development of areas of specialized production far removed from major consuming areas, but the retention of a favorable competitive position depends to a considerable extent on the costs of moving the products. Transporting farm products in 1940 cost 800 million dollars or 9 per cent of the total costs of marketing.[2]

Sorting, Grading, and Standardizing. Sorting is the physical separation of products of different qualities. Such separation may or may not conform to establish standards. Thus a farmer may sort out small or damaged potatoes before marketing them, or throw out moldy or immature ears of corn as the crop is cribbed, or separate hogs of one weight group from those of another group. Grading and standardizing are frequently used interchangeably and go farther than sorting. They refer to grouping in accordance with predetermined standards.

Agricultural products, as they are produced on the farms, lack uniformity. Inasmuch as buyers and consumers desire uniformity some basis of description is necessary. The earlier descriptions adopted by individuals and firms were diverse and unsatisfactory and led to more centralized systems. Several states, beginning with Illinois in 1871, set up state grading and inspection of grains. In 1916 the United States Grain Standards Act was passed providing a uniform system under Federal supervision. Since that time work of a similar character has been done, and Federal standards have been established for many kinds of farm products. These standards are based upon objective characteristics of the product. The principal factors that determine the grade of grain, for example, are test weight per bushel, moisture content, damaged kernels, foreign material, the amount of other grains or other classes of the same grain, and "condition," *i.e.*, whether it is cool, sweet or musty, sour, heating, or hot.

Standards provide advantages throughout the marketing chain. Products can be bought and sold without previous examination; uniformity between markets is provided; market values are better understood; products of like

[2] Ezekiel Limmer, Producer to Consumer, III, Transportation, *Agricultural Situation*, Vol. 25, No. 6, June, 1941, p. 16.

grades can be stored in bulk. Standards furnish a basis for market reporting and for advertising; they make possible the payment of premiums for high-quality production; and they permit sales for future delivery.

During World War II Federal standards formed the basis of huge government purchases for the armed forces and for lend-lease. These demands necessitated the application of standards to many products not previously covered.

Inspecting. Inspecting is closely related to grading and is sometimes considered a part of it. Inspecting is the physical examination of the product, most commonly to ascertain to what grade it belongs. Inspection is also employed as a regulatory measure as a check on suitability for certain uses. In slaughter plants which sell meat in interstate trade, for example, animals are inspected both before and after slaughter to detect disease which would render the meat unfit for human use. This is an entirely different operation from that in which the carcasses are graded for quality.

Inspection for grading purposes often involves sampling. Special devices are used to secure a representative sample from a bale of cotton or a car of grain. Inspection may be quite complex, as with government purchases of dried eggs during the war. A small sample from each batch of eggs dried was sent to a laboratory for testing for fats, solubility, solids, acidity, color, and texture.[3]

Processing. Processing is changing the form of products to make them ready for use. While the basic processes of food preparation and making clothing from fibers have long been practiced, processing has assumed a much broader role than formerly. Contributing to this expansion has been the widespread shift from home to factory of such operations as bread baking, buttermaking, and meat curing; the development of many new types of foods as a result of technological advances; the limited storage and food-preparation facilities in many living units; and the application of large-scale industrial methods to many processing operations.

The food industries have made available a wide variety of canned and preserved vegetables, fruits, and fruit juices; meats in fresh, mild-cured, and precooked form; a great array of bakery goods; and dairy products of many kinds. Perishable products have been made generally available through the use of refrigeration in processing plants, in wholesale and retail outlets, and in homes. In recent years dehydration has been used extensively for dairy products, eggs, and some vegetables, and quick-freezing is used to preserve a wide variety of foods, including precooked types.

[3] C. W. Kitchen, War Speeds Standardization. *Agricultural Situation*, Vol. 27, No. 3, March, 1943, p. 12.

These processing developments have added variety to the diets of many families, reduced the work in the home, made families more dependent on marketing services, and have increased the costs of marketing.

Packaging. The place of packaging in marketing is easily understood if one compares the grocery of 40 years ago with its stock of flour, cookies, crackers, sugar, salt, and rolled oats in barrels; butter in tubs; and lard in cans with a modern food store with its diversified stock of packaged goods. The same conditions which led to the expansion of processing have also influenced the packaging of these goods in small units for retail distribution. Larger shipping containers are also necessary for handling from the processor where most of the packaging is done by the retailer.

During World War II shortages of container materials led to an examination of types and to moves for standardization. For example, the National Container Committee recommended that the 540 different sizes of crates, drums, and sacks used in marketing fruits and vegetables be reduced to 110.[4] Similar reductions were made in sizes of "tin" cans. New types of containers were also devised.

Packaging is not only a convenience both to the merchant and the consumer, but it provides a means of identification. This influence is particularly valuable in self-service stores as a means of relating the product to advertising programs of national food processors and as identifying products of recognized quality. Requirements of packaging for maintaining the quality of the products vary greatly, and especially in those used in prepackaging fresh fruits and vegetables and meats.

Storing. Storage is the holding of goods from time of production until needed. Agricultural production, as indicated earlier, is seasonal, but the demand for products extends throughout the year. Storage helps to spread out the market supply. Some products like grains, if not held for too long a period, require only protection from the weather, hence can be held on farms. Much grain is also stored in local and terminal elevators. Other products with minimum storage requirements are cotton, wool, and evaporated milk. Fresh fruits and vegetables and potatoes require cold storage at above-freezing temperatures. Frozen foods require much lower temperatures. Some products like cheese require different temperatures as they go through the ripening process.

Storage tends to equalize supply and demand and thus affects prices. It often involves large investments and risks which necessitate regulation to ensure proper care of the stored materials. While adequate reserves are desirable, excess accumulations as occurred under government loans in the ever-normal granary program constitute a problem since, unless

[4] Harry Henderson, Packaging the Nation's Food. *Agricultural Situation*, Vol. 26, No. 5, May, 1942, p. 12.

destroyed or diverted to some unusual use, they must be absorbed into the usual marketing channels in competition with current production.

Financing. Financing is the provision of the money and credit necessary to carry products through the marketing channels. The farmer wants cash when he sells his products, and a considerable period of time may elapse before the finished products are sold to consumers. In the meantime large sums are necessary for those who buy, store, process, and distribute large quantities of products. These handlers may supply part of these funds, but often must depend upon borrowing. This is particularly true for seasonal products which must be stored for several months.

Under the price-support programs, the government through the Commodity Credit Corporation has financed the storage of grain on farms and of cotton in warehouses. These are nonrecourse loans under which the farmer can turn over the product to the government at the loan figure unless the price rises above that figure and he desires to redeem the product.

Risk Bearing and Insuring. The ownership of goods entails risk. Perishable products may be a total loss unless moved quickly. Products may be damaged by fire, floods, insects, transportation accidents, or theft; livestock may be injured or die. Aside from risk to the products is that of price changes in which the risk increases with the period of ownership. Strikes may stop the operation of processing plants or shipments on transportation lines. Risks of various kinds occur at every step in the marketing process.

Some risks must be sustained as part of the cost of marketing; others can be shifted. Goods may be insured against losses by fire or flood or losses in transit. For products like grain and cotton for which organized speculation is available the owner may use hedging as a means of shifting risk of price changes. Government guarantees through loans and price supports also reduce the risk of price declines.

Distributing. The average consumer wants small quantities of many different products. Distribution bridges this gap between the large-scale processors and the great number of consumers. Earlier, distribution was carried on almost entirely at two levels, wholesaling or distribution from processors to retailers, and retailing or distribution to consumers. During the past two decades these levels have been partially consolidated through the development of corporate food chains which carry the distribution from the processor to the consumer through multiple retail outlets and which frequently include some processing as well. These stores handle large volumes of a wide variety of products, use the most modern equipment, but provide only limited service. Because of this type of competition many independent retail food stores have instituted cooperative

purchasing and advertising as a step in consolidation. A somewhat parallel situation developed much earlier in meat marketing in which the processors also control most of the wholesale distribution.

Competition is keen among distributors, and particularly at the retail level. It is here that advertising is extensively employed both to popularize brand-name products and to appeal by price competition.

These marketing services or functions obviously apply differently in degree and method with different kinds of products. Some products go through a short and simple marketing chain, while for others it is long and complex. Technological developments and consumer demand have tended to increase the number of final products of farm origin and to supply them in a constantly broadening area. At the same time the marketing organization has tended toward greater centralization.

Marketing Agencies

From the preceding discussion of marketing services it is evident that most farm products reach the consumer indirectly, *i.e.*, through others than the original producers. Some direct marketing takes place as in the case of a dairyman who not only produces the milk, but pasteurizes, bottles, and delivers it to the homes of customers daily or on alternate days; or the farmer who delivers eggs to consumers once a week. Farmers' roadside stands furnish another illustration, as do city markets which provide stalls where producers sell various products to consumers. The extent of such direct marketing from producer to consumer is definitely limited, by distance, to types of products which require a minimum of processing, and to those available in uniform supply and quality, unless distribution is restricted to seasonal production. Even then the time involved and the inconvenience are obstacles.

To overcome these difficulties and to provide a steady flow of both fresh and processed goods to consumers at convenient places, and in desired amounts, the marketing system has been developed. Marketing systems would be a more accurate expression, for in practice products follow largely commodity channels, because of the nature of the products and the kinds of facilities needed to handle them. Thus, in general, grains follow one channel; cotton, another; tobacco, still another; with separate channels for livestock, dairy products, and poultry and eggs. At the farm end of the marketing process these different channels are familiar in the types of buyers for the different products. Not only does each class of product differ from the others, but the channel or path of each class of products has many variations.

The agencies which perform the marketing services on farm products

have been classified into two major groups: those engaged in wholesale business, including processing, and those in retail business (Tables 35 and 36). Under the wholesale classification the textiles, cotton and wool, and leather products are included as raw materials, but the processed goods are not included under consumer goods. These products, likewise, are not listed as agricultural under the classification of retail stores.

TABLE 35. SELECTED KINDS OF WHOLESALE BUSINESS, UNITED STATES, 1939*

Kind of business	Number	Per cent of total
United States total wholesale trade	200,573	100.0
Service and limited function wholesalers:		
Farm products—raw materials	2,086	1.0
Farm products—consumer goods	10,945	5.5
Groceries (general line)	3,942	2.0
Groceries and foods (specialty lines)	12,045	6.0
Tobacco and products (except leaf)	2,717	1.4
Manufacturers' sales branches (with stocks):		
Farm products—consumer goods	610	0.3
Groceries and foods (specialty lines)	2,592	1.3
Tobacco and products (except leaf)	44	0.02
Manufacturers' sales offices (without stocks):		
Farm products—consumer goods	75	0.04
Groceries and foods (specialty lines)	810	0.4
Tobacco and products (except leaf)	136	0.1
Agents and brokers:		
Farm products—raw materials	3,091	1.5
Farm products—consumer goods	1,287	0.6
Groceries and foods (specialty lines)	2,729	1.4
Tobacco and products (except leaf)	25	0.01
Assemblers (mainly farm products):		
Farm products—raw materials	15,639	7.8
Farm products—consumer goods	12,132	6.0
Groceries and foods (specialty lines)	819	0.4
Total wholesale trade, farm products	71,724	35.77

* U.S. Department of Commerce, Bureau of the Census. "Wholesale Trade, 1939, United States Summary," dated Mar. 31, 1941, Table 1, selected items, pp. 6–19, quoted by William E. F. Conrad in *Agricultural Situation*, Vol. 25, No. 10, 1941, p. 29.

Agencies handling agricultural products in 1939 represented 36 per cent of the country's business units at the wholesale level and 45 per cent at the retail level. Of those at the wholesale level 29 per cent were concerned with the raw materials of agriculture and 71 per cent with processing and distribution. At the retail level practically all the agencies were engaged in the distribution of finished products.

Agencies and Channels for Individual Products. A general idea of the agencies involved in marketing specific products and the manner in which the product is moved from one agency to another is shown graphically for wheat, livestock and meat, and chickens, and is traced for cotton.

Table 36. Selected Kinds of Retail Business, United States, 1939*

Kind of business	Number	Per cent of total
Total United States retail stores	1,770,355	100.0
Food group:		
Grocery stores (without fresh meats)	200,303	11.3
Combination stores (groceries and meats)	187,034	10.5
Dairy-products stores, milk dealers	16,834	1.0
Meat markets, fish markets	42,360	2.4
Candy, nut, confectionery stores	48,015	2.7
Fruit stores, vegetable markets	27,666	1.6
Other food stores	38,337	2.2
Total food group	560,549	31.7
General stores (with food)	39,688	2.2
Eating places	169,792	9.6
Hay, grain, and feed stores	16,772	0.9
Cigar stores, cigar stands	18,504	1.0
Total retail trade, farm products	805,305	45.4

* U.S. Department of Commerce, Bureau of the Census. "Retail Trade—the United States—1939, Employment, Payroll and Inventory," dated Feb. 14, 1941, p. 6, quoted by William E. F. Conrad in *Agricultural Situation*, Vol. 25, No. 10, 1941, p. 30.

Wheat.[5] Most of the wheat sold by farmers goes to country elevators which assemble the grain from many farms for shipment. A number of outlets may be used, but most of it goes to terminal elevators which store and condition it for resale. This wheat, together with some from country elevators, goes to flour millers and other processors such as manufacturers of cereals and macaroni and processors of industrial alcohol. From the flour millers, flour and by-products follow somewhat different paths, the flour going to wholesalers, retailers, and bakers who process it further on its way to retailers. The by-products go to manufacturers of mixed feeds and on through wholesalers and retailers to consumers (Fig. 16). Because other products are added in making cereals, bread, and mixed feeds the final products are greater than the amount of wheat sold. Other agencies

[5] Based on U.S. Department of Agriculture Technical Bulletin 934 by Donald R. Stokes, "Marketing Margins and Costs for Grains, Grain Products, and Dry Edible Beans," 1947, pp. 5–7.

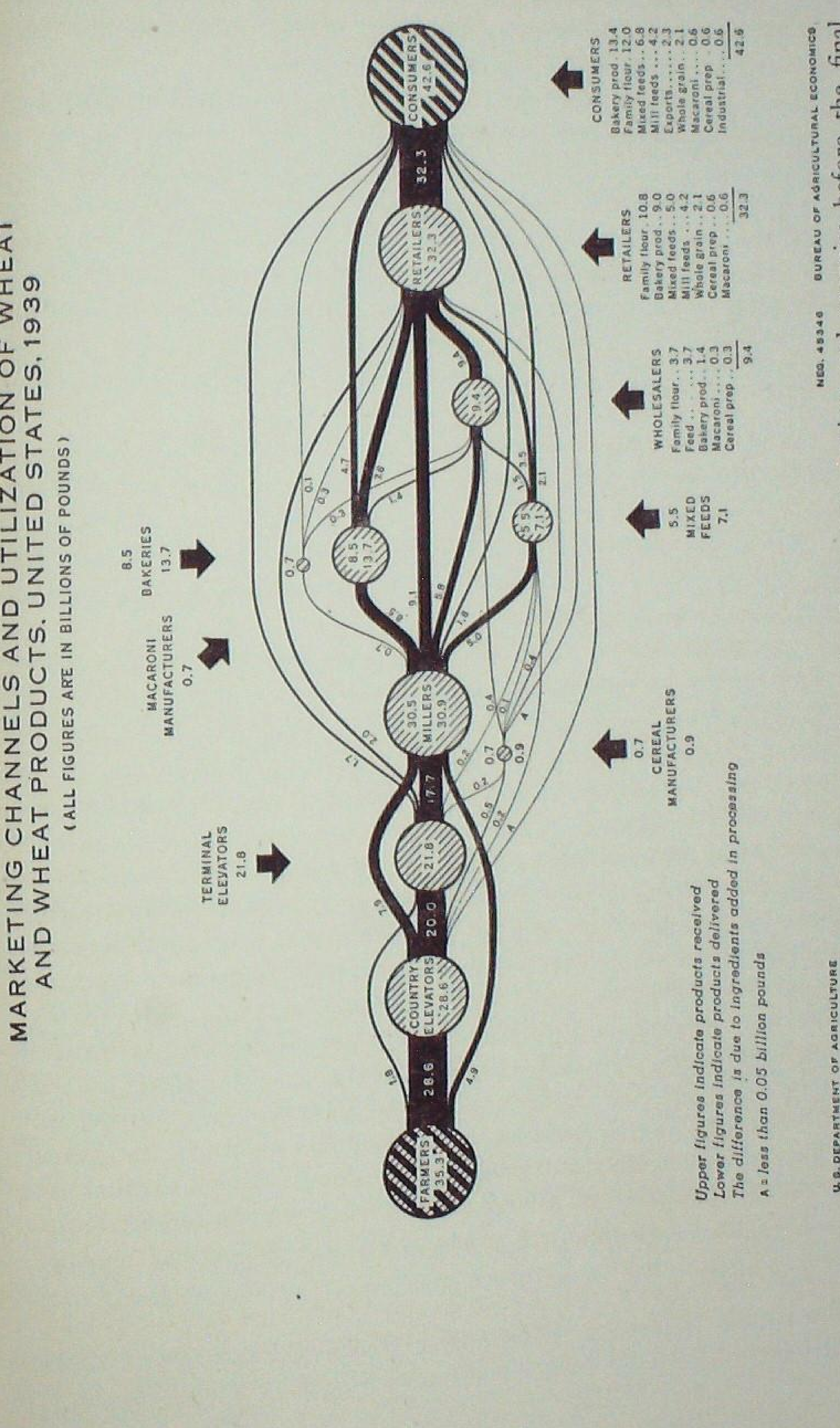

FIG. 16. The marketing of wheat products involves many services and agencies before the final products reach the consumers.

enter the picture at various points to provide transportation, financing, insuring, and avoidance of risk through hedging. Wheat is a major export item; hence wheat from terminal elevators and flour from millers may move to exporters, thence to buyers in other countries.

Livestock and Meats.[6] Of the cattle, hogs, and sheep sold by Corn Belt farmers in 1940, 82 per cent went to packing plants for slaughter and 18 per cent mainly to farms and feed lots for further feeding or for breeding and dairy purposes. Of the slaughter livestock the largest movement was through the terminal public markets, a considerable amount moved directly to packing plants, and the remainder through various local agencies such as dealers, concentration yards, auctions, and local cooperatives. The proportions varied for the species of livestock; a larger proportion of hogs than of cattle or sheep was shipped directly to packers (Fig. 17).

At the terminal markets several agencies may participate. Stockyard companies provide facilities for unloading, holding in pens, and feeding. Commission companies sell the animals. The chief buyers of slaughter stock are packing plants located at the terminal market, order buyers for outside packing plants (usually in the East), speculators or scalpers who buy and sell on the same market.

The marketing channel for meat is quite short, about three-fourths of the output of the packing plants going to retail stores either directly or through the branch houses of the packing plants (Fig. 18). More than 10 per cent in 1939 went directly to institutions and other large users or to exporters. Only a relatively small amount moved through wholesalers and jobbers to retailers. During World War II huge quantities of meat were purchased by government buyers for use of the armed forces and for lend-lease. For the war period this activity greatly modified the normal channels of distribution. In addition to animals sold for slaughter, many animals, particularly hogs, are slaughtered on farms. Some meat from this source is sold locally.

Chickens.[7] Chickens are usually marketed in relatively small volume by large numbers of farmers. Processing requires less equipment than for meat animals and may take place either in the country or at processing plants in the city. Many agencies buy and handle chickens. As a result of these conditions many variations occur in the marketing channel. The typical movement, however, is by way of the independent buying station,

[6] Based on U.S. Department of Agriculture Technical Bulletin 932, "Marketing Margins and Costs for Livestock and Meat," by Knute Bjorka, 1947, pp. 4–9.

[7] Based on U.S. Department of Agriculture Technical Bulletin 969, "Marketing Margins and Costs for Poultry and Eggs," by E. P. Winter, 1948, pp. 7–9.

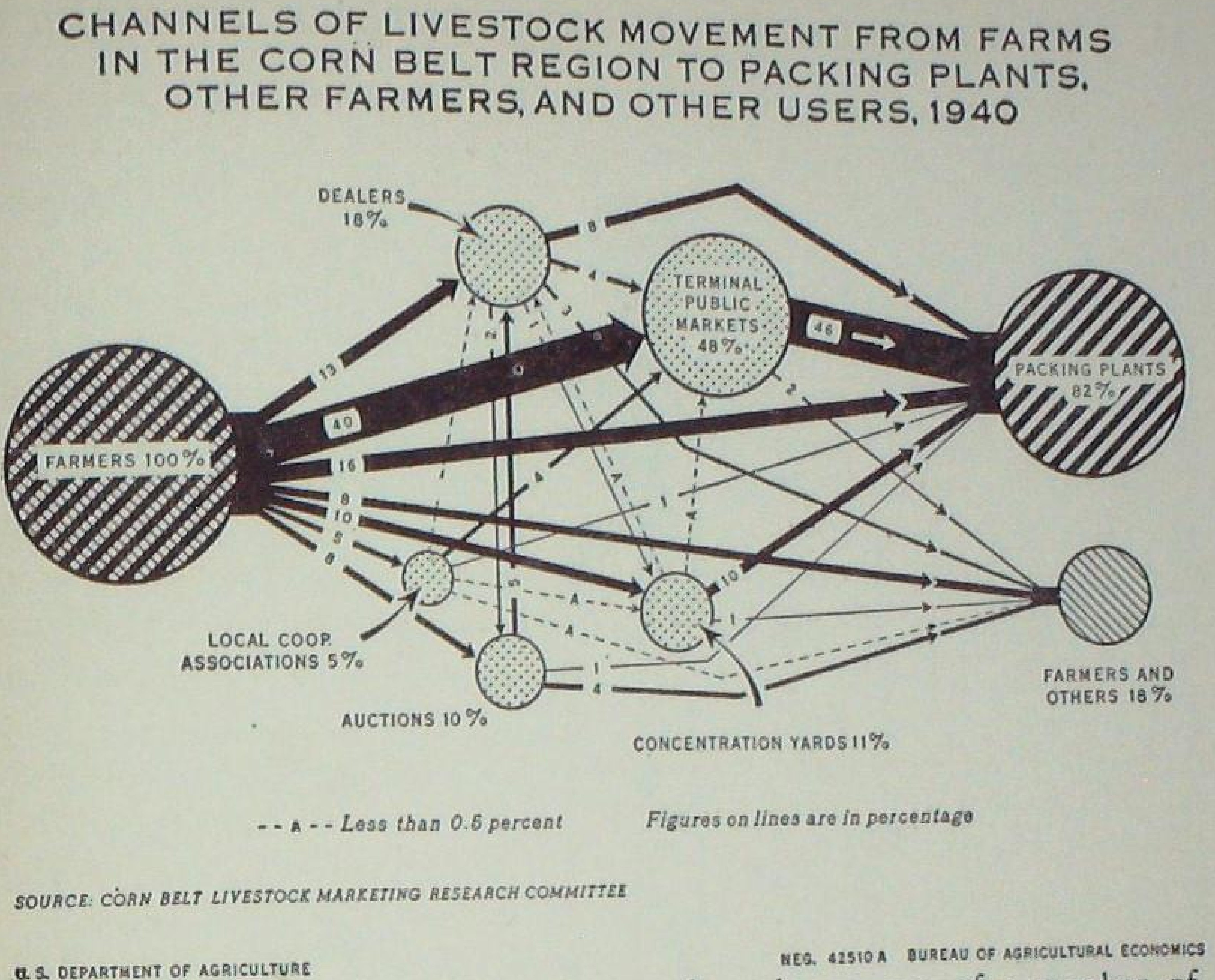

FIG. 17. Although livestock may move through any one of a number of different channels the routes are fairly direct.

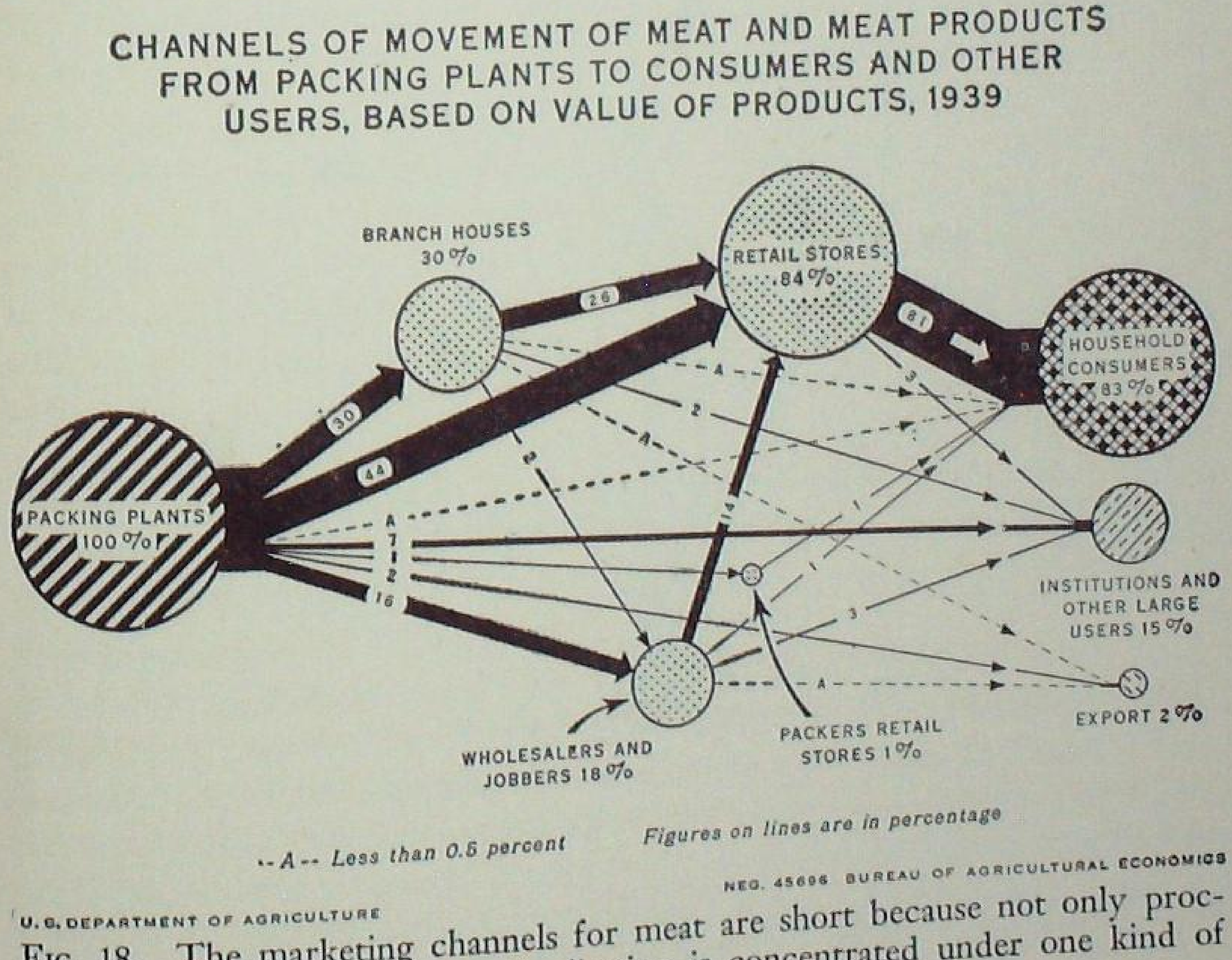

FIG. 18. The marketing channels for meat are short because not only processing but also much of the distribution is concentrated under one kind of marketing agency.

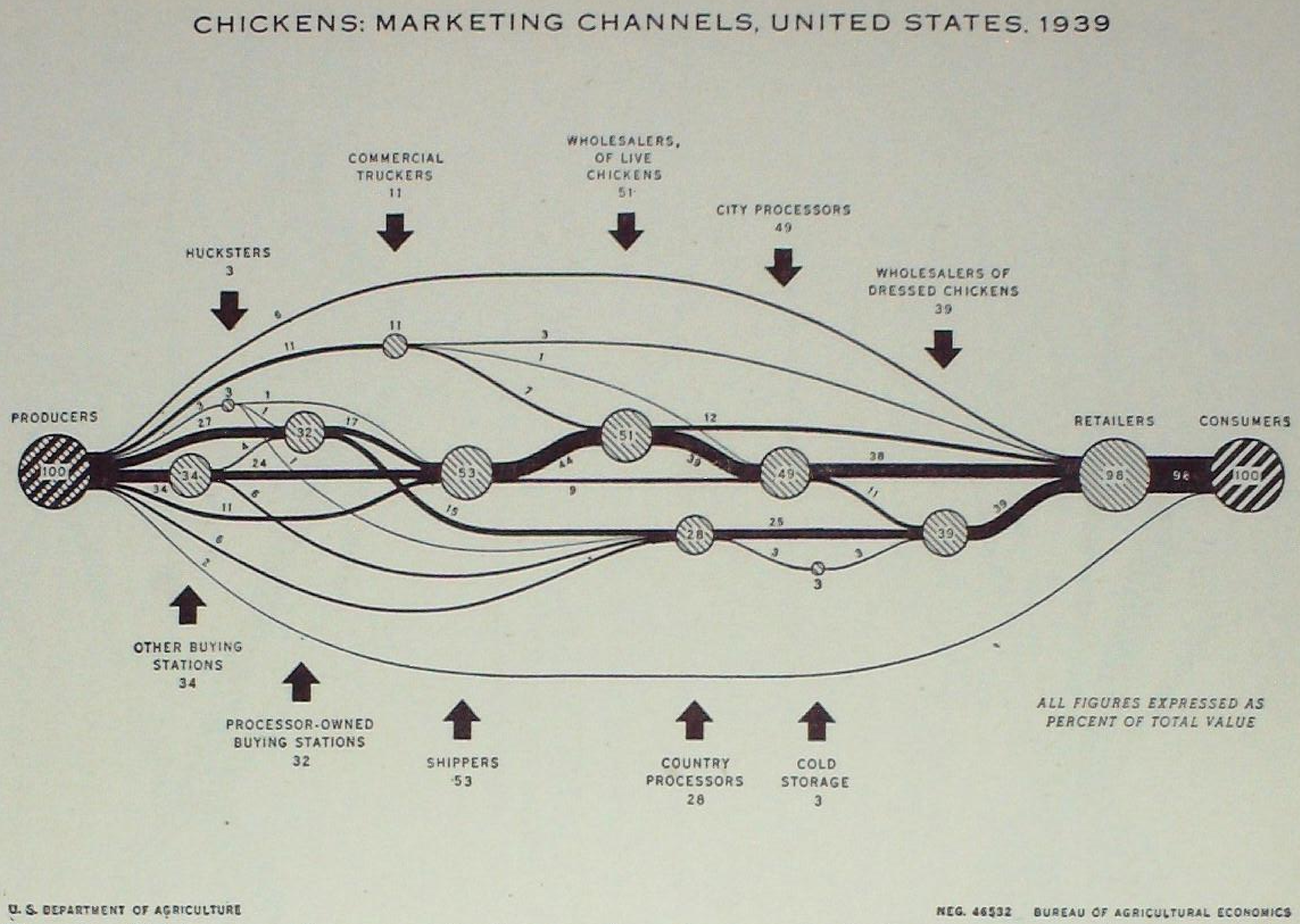

Fig. 19. Chickens, unlike meat animals, pass through many marketing agencies on the way to the consumer.

shipper, wholesaler of live poultry, city processor, and retailer (Fig. 19). The rapid expansion in the broiler industry in recent years together with the quick-freezing process has doubtless modified the flow of this product.

Cotton.[8] Seed cotton moves from farms to ginners where it is cleaned, the seed separated from the lint (ginning), and the lint packed and wrapped in 500-pound bales. From gins it moves to compresses where the bales are further compressed, thence to warehouses where it is assembled and stored. From warehouses it goes to mills or manufacturers where the bales are opened and the cotton is picked, carded, combed (for fine yarns), and spun into yarn; most of the yarn is woven into cloth, some goes into knit goods, and some to other uses such as thread, twine, cordage, and tire cord. Of the knit goods the greater part goes to dyers and finishers for bleaching, dyeing, and printing. The part used for clothing and household goods goes to manufacturers of such materials; then the finished products are distributed through wholesalers, jobbers, or other agencies to retailers, and thence to consumers. The marketing channel for cotton is very long and involves a large number of agencies.

Cottonseed is an important by-product with its own channel from which emerge the primary products of oil, meal, and linters, and numerous products of lesser value.

The Role of Government

Few persons recognize the extent to which the marketing of farm products is influenced directly and indirectly by governmental action. It is evident that a system of markets covering a wide area and handling many kinds of products of varying quality would lack uniformity unless standards were provided by a central agency and were generally accepted in the trades. Moreover, some individuals would take advantage, by unfair practices. The task of keeping currently informed in a rapidly changing situation is a difficult one, and new problems are constantly arising to require study. The Federal government has undertaken to render assistance through regulatory, informational, and research activities. Other activities not aimed at marketing have exerted an influence indirectly. State and local agencies of government have likewise engaged in activities affecting marketing.

Federal Regulatory Activities. The U.S. Department of Agriculture through the Production and Marketing Administration administers more than a score of laws relating to the marketing of farm products. These relate primarily to standardization and inspection, the prevention of unfair practices, and the income to producers by means of marketing agreements.

[8] Based on U.S. Department of Agriculture Technical Bulletin 891, "Marketing and Manufacturing Margins for Textiles," by L. D. Howell, 1945, pp. 2–7.

Standards were set up first on cotton in 1914. By 1935 standards for quality had been announced on 169 items covering the most important agricultural products. The war period brought demands for additional standards as a basis for administering price-control legislation. Some standards, as on cotton and grain, are mandatory, *i.e.*, they are required on products sold by grade in interstate commerce. Most are permissive, *i.e.*, recommended for optional use and employed in inspection work and for the market news service. Standards are developed along lines of commercial use and are set up first in tentative form and tested under market conditions before being adopted as permissive or mandatory. Laws on standards provide for various types of inspection and supervision in order to secure uniform application throughout the country. In practice the use of standards has often been opposed by the trades on the ground that they would destroy the value of brand names used in advertising.

The prevention of unfair practices may be illustrated by four laws of this type. The Packers and Stockyards Act seeks to control unfair, discriminatory, or deceptive practices by meat packers engaged in interstate trade and requires that rates charged by stockyards and commission men be just, reasonable, and nondiscriminatory. The Perishable Agricultural Commodities Act requires licensing of commission merchants, dealers, and brokers who handle fresh fruits and vegetables. Under the United States Warehouse Act public warehouses for storing certain agricultural products are licensed and bonded to provide a system of safe storage. Agricultural and vegetable seeds, if moved in interstate commerce, are subject to the Federal Seed Act, which requires labeling as to variety and germination, and compliance with noxious weed laws of the state to which it is shipped. Certain standards are required for imported seeds. Through these and other regulatory laws marketing is facilitated and abuses are prevented. Thus the interest of the public is protected at many points.

Marketing agreements legislation provides for protecting the income of producers on a basis equivalent to parity. Such agreements may be made with processors, producers, associations of producers, and others who handle a commodity or products made from it. Marketing agreements may result, but rarely do, from the voluntary action of producers and handlers. They are compulsory if supported by referendum vote of two-thirds of producers handling two-thirds of the product and handlers of at least 50 per cent of the volume of the product. Thus far this act which dates from 1937 has been used chiefly by producers of fresh fruits and vegetables and milk.

Federal Informational Activities. Marketing information is provided by the Market News Service of the Production and Marketing Administration. Information covers the following commodity lines: fruit and vegetables; livestock, meats, and wool; dairy and poultry; grain, feed, rice,

hay, beans, hops; cotton and cottonseed; and tobacco. Information is secured usually in cooperation with state agencies by market reporters at 110 market centers in which the marketing of one or more of these commodity lines is important. About one-third of these centers which report on fruits and vegetables and tobacco operate on a seasonal basis.

Market reporters contact buyers and sellers, transportation lines, storage and other agencies to collect and compile information on market prices, market receipts, storage stocks, retail movements, and the like. The information is disseminated through the familiar radio broadcasts, the press, and market summaries issued on a daily, weekly, monthly, or seasonal basis. The reports differ with the nature of the commodity. The purpose for all commodity groups, however, is the same, to provide unbiased information for the benefit of all interests.

Federal Research Activities. The general research activities of the U.S. Department of Agriculture were traced in the chapters dealing with agricultural history. Part of these research efforts were directed toward marketing and were carried on both directly by the U.S. Department of Agriculture and by the state agricultural experiment stations with Federal support. While research in marketing has received much greater emphasis since 1925, mention should be made of the earlier extensive work necessary to the formulation of Federal standards for grading. Much attention has been given in recent years to marketing costs and margins. Under the Research and Marketing Act of 1946 funds were provided for a much broader and more coordinated scope of marketing research than had been undertaken before. Many projects of this kind are under way and should contribute to the solution of the problems.

Other Federal Activities Affecting Marketing. Many other activities which were not directed toward marketing have had an influence upon it. Acreage-control programs and subsidies for increased production were intended to change the market supplies, though in different directions. Similarly food-stamp plans at home and foreign aid through lend-lease and rehabilitation modified demand. Government purchases, loans, and storage measures affected the time of marketing. Price floors and ceilings, procurement for armed forces, food orders, and rationing likewise influenced the normal flow of goods. Such measures may be helpful or harmful to orderly marketing. The large number of such indirect influences in recent years has added difficulties to a marketing system already complex.

State and Local Governmental Activities. State and local governmental bodies have also inaugurated activities which affect marketing. Many of these cooperate with or complement activities of Federal agencies such as market news reports; sanitary regulations; pure seed laws; control of harmful insects and plant diseases and livestock diseases; regulation of

markets; inspection, grading, and packaging of products; correct scale weights, and the like.

These state regulations are subject to two objections: first, they lack uniformity, a fact which frequently causes difficulties when farm products are moved across state lines. Further, while ostensibly set up for justifiable purposes, they have frequently been used as a means of discrimination against competing products from outside areas. For example, inspection requirements for dairy products may exclude products from areas outside of established inspection zones; some margarine taxes are designed to protect dairy interests; license requirements and taxes on out-of-state motor trucks and on merchant truckers are frequently restrictive if not prohibitory; state regulations relating to grades, standards, labeling, and containers are used to give distinct advantages to products produced in the state, while state-financed advertising frequently boosts home products; and quarantines cause unnecessary delay and expense. State and local regulations have their place; if, however, greater uniformity were achieved between states and the regulations were limited to their valid purposes and not used to develop preferential markets the marketing of farm products would be freed of numerous embarrassing restrictions.

Summary

With the agricultural and industrial development of the country the marketing, processing, and distribution of the products of America's farms have become a huge business. It not only supplies the major part of the country's needs for food and fibers, but it also constitutes an important segment of the nation's economy. The numerous marketing services through which the raw materials from farms are made available throughout the year in the form desired and at convenient places provide employment to a large number of persons and add greatly to the value of the products.

Because of the diverse characteristics of farm products, the agencies which handle them and the channels through which they pass are organized on commodity lines. The agencies dealing in products of farm origin made up, in the prewar period, more than one-third of the wholesale units and nearly one-half of the retail units in the country.

The marketing of farm products is closely associated with major items in the cost of living and with public health. To protect the public interest the Federal government has taken an increasing role through its regulatory, informational, and research activities. Other Federal activities, especially the emergency measures of the war period, and state and local regulations also affect marketing, some to aid and some to hinder the free flow of products through marketing channels.

QUESTIONS

1. Define marketing. For farm products, where does the marketing process begin? Where does it end?
2. Why do not farmers sell more of their products directly to consumers?
3. What marketing services are involved in marketing farm products?
4. Define and illustrate each of these services.
5. Which of these services apply more fully to farm products than to manufactured goods? Why?
6. List the agencies that perform each of the marketing services.
7. Why are different agencies involved in handling different kinds of farm products?
8. Are middlemen necessary to marketing? Why?
9. Would marketing costs be reduced if some or all middlemen were eliminated?
10. To what extent can farmers adjust their production and time of marketing in line with consumer demand?
11. What are marketing channels?
12. Illustrate such channels for specific products.
13. In what ways does the Federal government aid in marketing farm products?
14. What activities of state and local government are related to marketing?
15. What problems do farmers have in marketing their products?
16. What influences operate to improve the marketing of farm products?

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Chapter 9. COSTS OF MARKETING AGRICULTURAL PRODUCTS

Many questions have been raised concerning the cost of marketing farm products but until recently little information was available to answer them. Farmers have felt that the prices they received were low in comparison with those charged at retail; consumers likewise have criticized the prices they have paid as unreasonably higher than those received by farmers. Indeed many cooperative organizations of producers and some of consumers have been organized in an effort to reduce the marketing spread. The uses to which farm products are put are so diverse that as yet no over-all figures of retail values of all kinds of products of farm origin are available for comparison with the aggregate values of farm products sold. Attention has been given, however, to breaking down the marketing costs for selected food products and for the nonfood groups of tobacco, textiles, and leather products.

Marketing Costs for Food Products

The farm products which go to food uses represent approximately two-thirds of the total value of products sold from farms. Food costs are a very important item in the budget of consumers, particularly those in the lower income groups. The national marketing bill for food products is very significant, therefore, to both producers and consumers. It is important, also, to those engaged in marketing. From 1913 through 1948 the total marketing bill of food products exceeded the farm value of those products in all but 7 years, 1918 and 1943 to 1948.

Year-to-year Costs of "Market Basket." The changes in the amount of marketing costs may be expressed in terms of the "market basket" which represents the average annual purchases per family of three average consumers for the period 1935 to 1939 (Table 37 and Fig. 20). The market basket is composed of 51 typical food items representing the various food groups—meats, dairy products, poultry and eggs, cereals, fruits and vegetables, and some miscellaneous items. In expressing the value of this group of items allowance is made for the normal amount of waste in marketing and for the value of by-products. Foods produced for home use and

exports are excluded, as are charges for preparation and service of foods in eating places. The marketing charges include all the marketing services of local assembly, transportation, storage, processing, wholesaling, and retailing.

Note that the retail cost of items in the market basket was $246 in 1913. After 1915 it increased rapidly to $568 in 1920, then held very stable between $400 and $450 during the twenties. After 1930 it fell to $276 in 1933, was variable until 1940, then rose rapidly reaching its peak in 1948 when the yearly average retail cost was $687. In June, 1948, the extreme peak of $708 was reached after which retail costs declined.

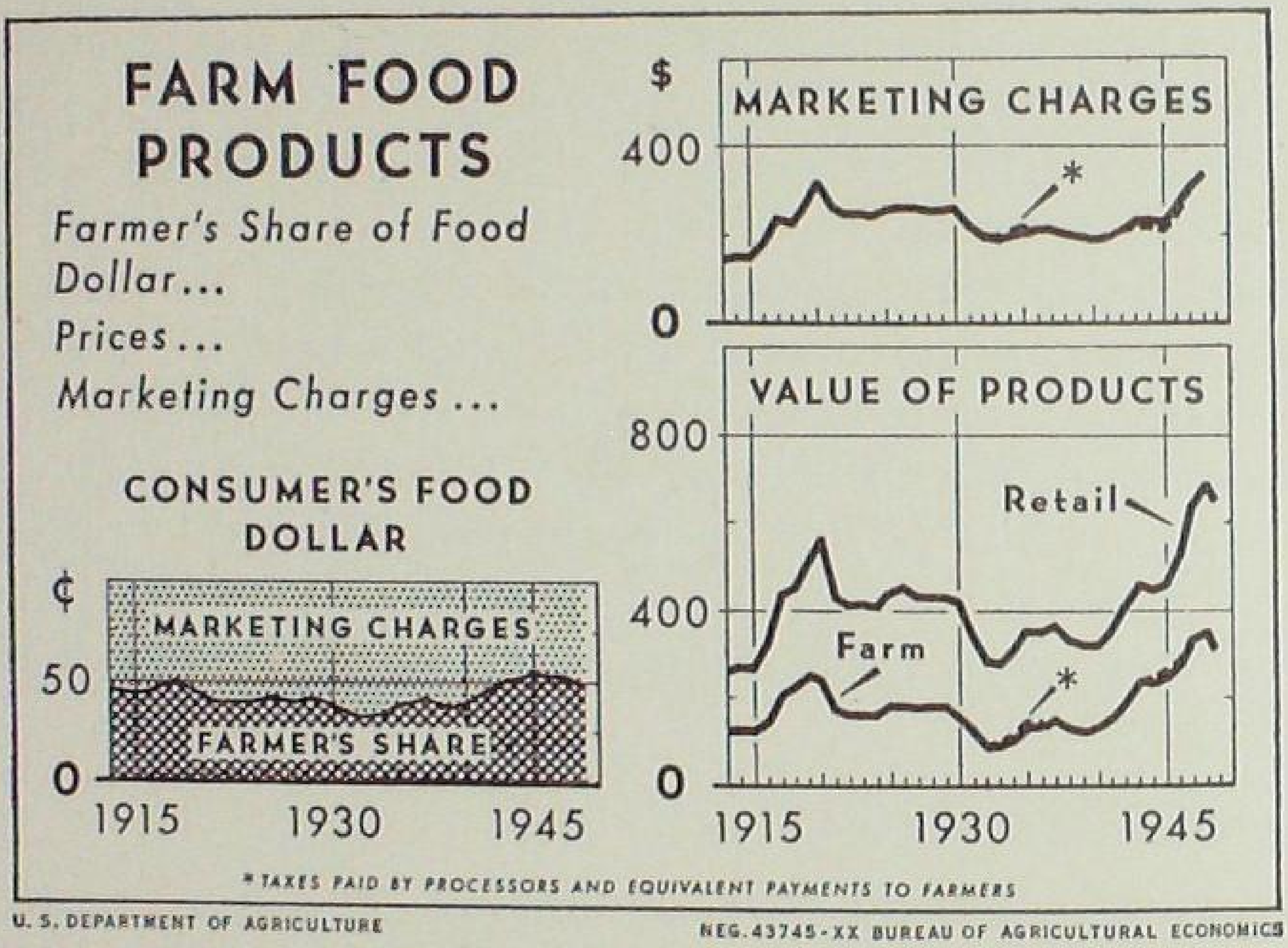

FIG. 20. The farmer usually receives less than half of the consumer's dollar for food products. Because marketing costs are rather rigid, changes in retail values are quickly reflected in prices the farmer receives.

The farm value followed a course closely parallel to that of retail cost. The marketing margin, which is the difference between retail cost and farm value, is much more stable than either retail or farm value. During the 36-year period the range from low to high in marketing costs was $188; for farm value it was $267 and for retail cost $423. The greater stability of marketing costs arises from the fact that marketing services are made up very largely of labor costs, which change more slowly than farm values or retail costs.

The farmer's share for food products ranged from a low point of 32 per cent in 1932, or 32 cents for each dollar the consumer spent for food, to a high point of 54 per cent in 1945 and 1946. During the 36-year period farmers received less than 40 cents of the consumer's dollar in 7 years;

TABLE 37. MARKET BASKET OF FARM FOOD PRODUCTS: PRICES, MARKETING CHARGES, AND FARMER'S SHARE OF CONSUMER'S DOLLAR, 1913–1949[a]

Year	Retail cost[b]	Farm value adjusted for by-products[c]	Farm value plus government producer payments[d]	Margin	Marketing charges[e]	Farmer's share,[f] %	Marketing charges as per cent of retail cost
1913	$264	$124	...	$140	$140	47	53
1914	272	125	...	147	147	46	54
1915	267	120	...	147	147	45	55
1916	321	145	...	176	176	45	55
1917	442	210	...	232	232	48	52
1918	457	235	...	223	223	51	49
1919	513	250	...	263	263	49	51
1920	568	245	...	323	323	43	57
1921	427	171	...	256	256	40	60
1922	408	163	...	245	245	40	60
1923	413	166	...	247	247	40	60
1924	406	166	...	240	240	41	59
1925	442	191	...	251	251	43	57
1926	448	188	...	260	260	42	58
1927	434	180	...	254	254	41	59
1928	435	186	...	249	249	43	57
1929	435	183	...	252	252	42	58
1930	421	165	...	256	256	39	61
1931	339	121	...	218	218	36	64
1932	284	92	...	192	192	32	68
1933	276	89	$91	187	185	32	67
1934	311	107	116	204	195	34	63
1935	347	138	147	209	200	40	58
1936	349	143	...	206	206	41	59
1937	362	156	...	206	206	43	57
1938	328	128	...	200	200	39	61
1939	316	122	...	194	194	39	61
1935–1939 av.	340	137	139	203	201	40	59
1940	317	128	...	189	189	40	60
1941	347	154	...	193	193	44	56
1942	407	196	...	211	211	48	52
1943	458	236	238	222	227	52	50
1944	450	237	246	213	225	53	50
1945	459	247	258	212	228	54	50
1946	528	283	289	245	254	54	48
1947	643	344	...	299	299	53	47
1948	687	359	...	328	328	52	48
1949	646	309	...	337	337	48	52

[a] *Agricultural Outlook* charts, 1949. Average annual purchases per family of three average consumers, 1935–1939. 1949 from *Marketing and Transportation Situation*, May, 1950.

[b] Calculated from retail prices collected by the Bureau of Labor Statistics and the Bureau of Agricultural Economics.

[c] Payments to farmers for equivalent quantities of farm produce minus imputed value of by-products obtained in processing.

[d] Includes government payments to producers of selected products except benefit, conservation, and parity payments after 1935.

[e] Marketing charges equal margin minus processor taxes plus government payments to marketing agencies.

[f] Farmer's share of consumer's food dollar calculated from farm value before addition of producer payments.

from 40 to 44 cents in 15 years; from 45 to 49 cents in 7 years; and from 50 to 54 cents in 7 years. The farmer's share increased in the periods 1916 to 1918, 1932 to 1937, and 1940 to 1945. These were periods in which prices of farm products were rising. Conversely, the farmer's share declined in 1918 to 1921, 1928 to 1932, and 1937 to 1939—all periods of falling farm prices. Farm marketing costs are like farm operating costs in that they lag behind changes in farm prices. In periods of rising farm prices farmers receive an increasing proportion of the consumer's dollar until marketing costs catch up as they did in 1919 and again in 1947 and 1948. In periods of falling farm prices farmers receive a decreasing share because marketing costs decline more slowly than farm prices.

TABLE 38. FOOD PRODUCTS: INDEXES OF MARKETING CHARGES, HOURLY EARNINGS OF FOOD-MARKETING EMPLOYEES, AND LABOR COSTS PER UNIT OF FARM-FOOD PRODUCTS MARKETED, UNITED STATES, 1929–1948
(1935–1939 = 100)*

Year	Marketing charges	Hourly earnings†	Unit labor cost‡	Year	Marketing charges	Hourly earnings†	Unit labor cost‡
1929	124	...	117	1939	96	102	100
1930	127	...	113	1940	94	104	100
1931	108	...	103	1941	95	111	106
1932	95	92	89	1942	105	122	115
1933	90	87	81	1943	111	134	121
1934	96	99	92	1944	112	142	125
1935	100	95	94	1945	112	152	131
1936	102	97	98	1946	126	176	148
1937	103	101	105	1947	151	199	177
1938	99	104	102	1948	166	214	196

* *Agricultural Outlook* charts, 1950, p. 16.

† Weighted average of hourly earnings of all employees engaged in retail food stores, wholesaling, processing, and transportation of farm food products.

‡ Quotient of total marketing payroll and physical volume of food marketed for civilian consumption.

Why the Farmer's Share Varies from Year to Year. Variations from year to year in the farmer's share for all food products may be ascribed principally to two causes: changes in labor costs and extent of marketing services. Direct labor costs make up about one-half of marketing costs; indirect labor costs, such as wages of persons not directly engaged in handling the products, would further increase this proportion. Direct labor costs follow a trend similar to that of marketing charges (Table 38). When expressed on a percentage basis of the prewar period, 1935 to 1939, by 1947 marketing charges had increased by 48 per cent and hourly earnings of food-marketing employees by 99 per cent. Because of increased

productivity of labor the labor cost for each unit of product marketed increased only 78 per cent.

The extent of change in marketing services is not measurable in exact terms. It is generally agreed, however, that as compared to some years ago marketing provides better grading, more convenient packages, added processing as illustrated by quick-freezing and prepackaging, as well as greater availability of a wide variety of foods. These additional services add to marketing costs.

The share which goes to marketing costs is not a measure of efficiency or of profits in marketing. While inefficiency exists at many points, the figures in Table 38 indicate an improvement in this respect. Marketing margins, obviously, are not all profit, but involve many items of expense as will be illustrated later.

TABLE 39. THE MARKET BASKET BY FOOD GROUPS, 1935–1939 AVERAGE AND 1948*

Food groups	Retail price	Farmer's share	Farmer's share, %
1935–1939 av.			
1. Poultry and eggs	$26.47	$17.56	66
2. Meat products	88.09	46.35	53
3. Dairy products	67.27	33.47	50
4. Fruits and vegetables	77.58	23.91	31
5. Bakery and cereal products	55.09	11.39	21
6. Miscellaneous	25.97	4.77	18
Total	$340.47	$137.45	40
1948			
1. Poultry and eggs	$55.52	$38.00	68
2. Meat products	205.41	141.69	69
3. Dairy products	133.14	80.13	60
4. Fruits and vegetables	147.28	56.16	38
5. Bakery and cereal products	96.18	28.72	30
6. Miscellaneous	49.18	14.03	29
Total	$686.71	$358.73	52

* 1935–1939 average from Table 3, U.S. Department of Agriculture Miscellaneous Publication 576, Price Spreads between Farmers and Consumers for Food Products, 1913–1944; 1948 data from *The Marketing and Transportation Situation*, MTS 69, February, 1949.

Costs by Food Groups and Individual Foods. Marketing costs vary not only from year to year, but also in the same year as between different food groups and individual foods. The farmer's share of the consumer's dollar is much higher for livestock products—poultry and eggs, meats, and dairy products—than for fruits and vegetables and cereal products (Table 39). In 1948 the retail price of the market basket was more than twice as much as for the average of the five prewar years, but the relative

positions of the marketing costs for different groups remained about the same. The year 1948 was one of high prices, and one in which the farmer's share was only slightly below the peak of 54 per cent attained in 1945 and 1946. As retail prices decline from a high level, most of the decline is reflected in farm prices because of the greater rigidity of marketing costs.

Variations in the farmer's share and likewise in the marketing costs are more pronounced for individual foods than for the food groups (Table 40). Thus for the 30 food items listed, the farmer's share for 1948 varied from a high point of 76 per cent for butter to a low point of 16 per cent for canned corn and canned peaches. For each product the value of the farmer's share represents such a quantity as will produce the retail unit shown after by-products and waste are provided for. With pork, for example, 1.39 pounds live weight is required to provide 1 pound of retail pork cuts. Similarly 1.41 pounds of wheat makes 1 pound of flour, and 1.95 pounds of milk makes a 14½-ounce can of evaporated milk.

In Table 40 the 30 market-basket items are arranged in the order of the farmer's share for 1948. Note that with the one exception, potatoes, all the livestock product items (groups 1, 2, and 3) show a higher percentage going to the farmer than the other groups. Potato prices doubtless would have been lower and would have returned a smaller proportion to the farmer if they had not been favored by a high government price support.

When the farmer's share for 1948 is compared with that for the prewar period 1935 to 1939, the order of percentages is somewhat different. Recall that from prewar years to 1948 the retail cost of the market basket more than doubled and that the farmer's share advanced from 40 to 52 per cent. This change, however, was not shared equally by all products. Of the 30 items shown in Table 40, 6 had an increase of 14 to 17 percentage points; 10 gained 8 to 12 points; 11 gained 2 to 6 points; and 3 items lost 2 to 3 points. While the change in the general price level might be expected to affect prices of all products to the same extent, the demand and supply conditions for different products, of course, are not uniform. Despite these individual variations, in general the same kinds of products return to the farmer a higher or a lower share.

Why the Farmer's Share Varies for Individual Products. Several influences affect the proportion of the consumer's dollar which the producer receives for individual products. These may be listed as follows: relation of bulk to value, amount and cost of processing, length of marketing chain, and changes in marketing efficiency.

Relation of Bulk to Value. The higher the value in relation to bulk, the greater is the farmer's share for individual products. For example, in 1948 the farmer received 74 per cent of the consumer's dollar for eggs and 27 per cent for cabbage. The value at farm prices for a pound of eggs (⅔

TABLE 40. INDIVIDUAL FOOD PRODUCTS, RETAIL PRICES AND FARMER'S SHARE, 1935–1939 AVERAGE AND 1948*

Food product and retail unit	Food group†	1948			1935–1939
		Retail price, cents	Farmer's share, cents	Farmer's share, %	Farmer's share, %
Butter, lb	3	84.5	64.1	76	68
Eggs, doz	1	66.6	49.4	74	77
Beef (good grade), lb	2	73.7	53.4	72	56
Pork (including lard), lb	2	47.5	32.5	68	52
Fluid milk, qt	3	20.5	13.67	67	55
Lamb, lb	2	64.3	42.2	66	49
Cheese, American, lb	3	62.8	38.8	62	53
Chicken, lb	1	56.7	33.4	59	56
Potatoes, lb	4	5.5	3.02	55	50
Milk, evaporated, 14½-oz. can	3	15.3	8.0	52	38
Navy beans, lb	4	20.4	9.72	48	46
White flour, lb	5	8.5	4.08	48	43
Snap beans, lb	4	21.4	9.7	45	40
Rice, lb	5	19.4	8.8	45	33
Corn meal, lb	5	8.5	3.75	44	47
Onions, lb	4	11.3	4.9	43	29
Apples, lb	4	11.1	4.76	43	41
Beet sugar, lb	6	9.9	4.11	42	30
Vegetable shortening, lb	6	41.3	16.79	41	27
Prunes, lb	4	21.6	8.19	38	30
Oranges, doz	4	43.4	15.2	35	37
Rolled oats, lb	5	13.8	4.8	35	24
Margarine, lb	6	41.4	13.94	34	24
Cabbage, lb	4	6.0	1.63	27	24
Canned peas, No. 2 can	4	15.1	3.84	25	15
Canned tomatoes, No. 2 can	4	16.7	3.44	21	16
Corn flakes, 8-oz pkg	5	12.3	2.53	21	11
White bread, lb	5	14.5	2.64	18	12
Canned corn, No. 2 can	4	20.1	3.28	16	12
Canned peaches, No. 2½ can	4	31.5	4.93	16	14

* Data for 1948 from *The Marketing and Transportation Situation*, MTS 69, February, 1949. Data for 1935–1939 average from Table 3, U.S. Department of Agriculture Miscellaneous Publication 576.

† The numbers indicate the food groups in Table 39.

dozen) was seven times as much as for a pound of cabbage. Neither of these products requires processing. Similarly, for butter the farmer received 76 per cent and for potatoes 55 per cent; the retail pound unit of butter had a farm value more than fifteen times that of potatoes, even though processing was necessary for the butter. While an individual farmer might

shift his production from a product returning a lower percentage to one with a higher percentage of the consumer's dollar, he could not be sure that such a shift would be more profitable. Relative profitableness depends upon relative costs and returns for the entire enterprise and usually for the entire farm business rather than upon the marketing charges per unit of retail product.

Amount and Cost of Processing. Much variation occurs in the amount of processing necessary to convert farm products into the form desired by the consumer, and the costs incurred are reflected in the share that the farmer receives. White bread requires much more processing than white flour, the main ingredient of the bread; in 1948 the farmer received 18 per cent for bread and 48 per cent for white flour. Likewise, corn flakes returned but 21 per cent compared to 44 per cent for corn meal with less processing.

Length of Marketing Chain. The simplest marketing channel is one in which the producer sells a product without change of form directly to the consumer. This is possible for only a few products such as eggs or apples; for many products the extent of direct marketing is definitely limited. Most products move through marketing chains whose lengths may vary greatly. Usually the more links in the chain, the greater is the marketing cost, since each process and each handler's services must be covered by the amount paid at retail. Chain food stores have developed as one means of reducing the number of agencies involved in marketing and the number of times the product changes hands. The marketing chain may be lengthened also by the addition of new processes or steps in the marketing procedure to satisfy the consumer's demand for certain qualities of product, types of packaging, or availability in off-season periods.

Changes in Marketing Efficiency. The marketing system has developed over a long period of time, and improvements have been adopted slowly. During the war period many changes were adopted because of the emergency, such as delivering milk three times a week instead of daily. Improvements tend to reduce marketing charges, the saving finally resulting in lower prices to the consumer or higher prices to the producer, or both. Increased efficiency in marketing one product which is not shared by other products may change its relative position in the proportion going to producers.

For any particular product two or more of these influences may act jointly. Individual products are subject also to those more general changes over a period of time as listed earlier, namely, changes in direct labor costs and the general trend toward increased marketing services. It is obvious that the individual farmer has a very limited opportunity to influence the share of the consumer's dollar that he receives. Large numbers of farmers

working jointly through their cooperative organizations have entered the marketing field at many points and have made real progress in reducing costs of assembling and distributing and to a limited degree in processing. These activities have tended to reduce the length of the marketing chain for some products and to increase marketing efficiency. In addition, they return to the farmer a part of the profits which would otherwise be absorbed in marketing charges. Such activities operate to increase the farmer's proportion of the consumer's dollar.

TABLE 41. DISTRIBUTION OF CONSUMER'S DOLLAR AND MARKETING MARGINS FOR FAMILY FLOUR AND BAKERY PRODUCTS, 1939*

Producers and marketing agencies	Family flour		Bakery products	
	Consumer's dollar, cents	Marketing margin, %	Consumer's dollar, cents	Marketing margin, %
Farmers (grain only)	38.3	.....	6.7	
Country elevators	2.9	4.7	0.5	0.5
Terminal elevators	2.5	4.0	0.3	0.3
Transportation	13.0	21.1	2.0	2.1
Millers	23.8	38.6	3.0	3.5
Bakers	......	.....	72.3	77.5
Wholesalers	3.2	5.2	2.5	2.7
Retailers	16.3	26.4	12.5	13.4
Total	$1.00	100.0	$1.00	100.0

* Donald R. Stokes, Marketing Margins and Costs for Grains, Grain Products, and Dry Edible Beans, U.S. Department of Agriculture Technical Bulletin 934, 1947, pp. 25 and 37.

Who Gets the Marketing Margin? With the background of the services performed in marketing, the marketing agencies and channels, and the farmer's share of the consumer's dollar, the question may well be asked, "How is the marketing margin divided among the agencies involved?" A general picture will be given for products representing four of the six food groups. The figures are for 1939, the last year of the 5-year prewar period, and before price controls and other wartime influences became effective. They would be expected to vary for particular situations, with the volume of product marketed, kind of transportation and length of haul, and the particular agencies involved, as well as with changes in the price level. For each product two columns are shown: the first is the breakdown of the familiar consumer's dollar; the second, the percentage distribution of the marketing margin.

Family Flour and Bakery Products. The marketing of family flour represents a fairly long marketing chain, but not so long as that for bakery products (Table 41 and Fig. 16). Of the consumer's dollar spent for

flour the farmer received 38.3 cents and the marketing cost was 61.7 cents. Of the marketing cost the flour miller received the largest share, 23.8 cents, which consisted mainly of costs of processing and wholesaling. The transportation cost of 13 cents included hauling costs for both wheat and flour. When the marketing margin is divided on the basis of cost items, salaries and wages (except for transportation) amounted to 19 cents; transportation, 13 cents; advertising, 3.5 cents; other expenses, 19.5 cents—occupancy, utilities, bad debts, administration expenses, and interest—and operating profits totaled 6.7 cents.

In marketing bakery products the farmer's share was small, 6.7 cents for the grain, and marketing costs accounted for 93.3 cents of the consumer's dollar. Of this bakers received the major part, 72.3 cents, a part of which was for other ingredients added, such as butter, sugar, eggs, milk, fruit, yeast, etc. These ingredients of farm origin cost the baker more than the flour. The bakers not only processed the products, but wholesaled and retailed a considerable part of them. After expenses of all agencies were paid, 7.7 cents remained for profit.

TABLE 42. DISTRIBUTION OF CONSUMER'S DOLLAR AND MARKETING MARGIN FOR LIVESTOCK AND MEAT, 1939*

Producers and marketing agencies	Consumer's dollar, cents	Marketing margin, %
Farmers	51.0	
Livestock marketing agencies (nonpackers)	4.2	8.6
Meat packers	19.7	40.2
Wholesalers (nonpackers)	1.3	2.6
Retailers	23.8	48.6
Total	$1.00	100.0

* Knute Bjorka, Marketing Margins and Costs for Livestock and Meat, U.S. Department of Agriculture Technical Bulletin 932, 1947, p. 13.

Livestock and Meat. Livestock and meat as pointed out earlier pass through few hands because of the concentration of processing and distributing. The figures shown are a composite for cattle, hogs, and sheep (Table 42 and Figs. 17 and 18). They would differ somewhat for these different species. Of the consumer's meat dollar in 1939, the farmer received 51 cents and the marketing margin was 49 cents. Retailers received the largest part, 23.8 cents; meat packers received 19.7 cents which covered slaughtering and processing (14.9 cents), a large amount of wholesaling (4.5 cents), a small amount of retailing (0.2 cents), and the operation of a few livestock markets (0.1 cents). By cost items salaries and wages of

the various agencies amounted to 26 cents, transportation of livestock and meat to 5.5 cents, and other costs and profits to 17.5 cents.

Chickens. Chickens pass through more agencies than livestock and meat, and the marketing services are less concentrated (Table 43 and

TABLE 43. DISTRIBUTION OF CONSUMER'S DOLLAR AND MARKETING MARGIN FOR CHICKENS, 1939*

Producers and marketing agencies	Consumer's dollar, cents	Marketing margin, %
Farmer	55.4	
Local buyer	2.1	4.7
Shipper of live chickens	6.3	14.1
Wholesaler of live chickens	2.2	5.0
Processor (including cold storage)	11.5	25.8
Wholesaler of dressed chickens	3.4	7.6
Retailer	19.1	42.8
Total	$1.00	100.0

* E. P. Winter, Marketing Margins and Costs for Poultry and Eggs, U.S. Department of Agriculture Technical Bulletin 969, 1948, p. 10.

TABLE 44. DISTRIBUTION OF CONSUMER'S DOLLAR AND MARKETING MARGINS FOR FLUID MILK AND AMERICAN CHEESE, 1939*

Producer and marketing agencies	Fluid milk		American cheese	
	Consumer's dollar, cents	Marketing margin, %	Consumer's dollar, cents	Marketing margin, %
Farmer	55.3	.....	48.6	
Manufacturer	....	.....	9.1	17.7
Assembler	....	.....	2.5	4.9
Transportation	....	.....	3.3	6.3
Wholesaler	....	.....	11.6	22.6
Distributor	38.6	86.4		
Retailer	6.1	13.6	24.9	48.5
Total	$1.00	100.0	$1.00	100.0

* Charles B. Howe, Marketing Margins and Costs for Dairy Products, pp. 10 and 53. U.S. Department of Agriculture Technical Bulletin 936, 1946.

Fig. 19). Likewise the marketing channels are more diverse. Of the marketing margin of 44.6 cents, the retailer received 19.1 cents and the processor (including cold storage) 11.5 cents. On a basis of costs, salaries and wages accounted for more than 45 per cent of marketing cost.

Fluid Milk and American Cheese. Whole milk sold from the farm goes to many uses. That used as whole milk is usually consumed near the area

of production, while that used as American cheese is often marketed at long distances. For fluid milk the services are concentrated in few agencies, but cheese passes through more hands (Table 44). Milk handling was concentrated largely in city plants which combined processing and a large part of distribution and thus accounted for 38.6 cents of the 44.7 cents of marketing margin. Of the 48.6 cents marketing margin for cheese the retailer receives a little more than half. By cost items wages and salaries accounted for 59.4 per cent of the marketing margin for fluid milk and 44.3 per cent of that for American cheese.

From the analysis of these marketing margins some observations may be listed. For some products many of the marketing services have been concentrated under certain agencies. In the absence of such concentration the retailer receives the largest single slice of the marketing margin. In all cases the cost of services of people—salaries and wages—makes up an important part of marketing cost.

Marketing Costs and Margins for Nonfood Products

About one-third of the products sold from farms in the United States is utilized for nonfood uses. Among these are important crops such as tobacco, cotton, and flax, whose major uses are for nonfood purposes; the major feed crops which contribute indirectly to food uses; and by-products of the foods groups. Four products will illustrate the nonfood groups: tobacco and cotton as crops, wool as a joint product of sheep raising, and hides and skins as by-products of the livestock industry. For each the major lines of utilization are shown as well as the distribution of the consumer's dollar and the marketing margin.

Tobacco. Producers of tobacco in the United States received 11.6 cents of the consumer's dollar in 1939, and cost of imports raised the total cost to marketing agencies to 15.2 cents, leaving a marketing margin of 84.8 cents (Table 45). Tobacco is considered a luxury product and as such is subject to heavy excise taxes by both the Federal and state governments. These taxes amounted to 36 cents, or 42.5 per cent of the marketing margin; this was more than three times as much as American farmers received for their tobacco. Manufacturers received 25.2 cents; it is from this share that the extensive advertising (4.2 cents) is paid. Only products with high marketing margins can support heavy expenses for advertising. Retailers also received substantially more than producers. Of the entire domestic production and imports, 70 per cent was used in the United States and 30 per cent was exported. When the marketing margin was analyzed on the basis of items of cost without regard to the agencies involved, excise taxes took 36 cents; salaries and wages, 17.8 cents; advertising, 4.2 cents; other costs, 16.5 cents; leaving 10.3 cents for profit.

Cotton. Cotton requires many services provided by many different types of middlemen in converting seed cotton to finished items of clothing or household equipment. The cotton grower received 7.5 cents of the consumer's dollar paid for apparel and household goods, and the marketing margin took 92.5 cents, of which manufacturers at various stages received more than half (48.1 cents). Retailers received nearly a third of the dollar (Table 46 and Fig. 21).

TABLE 45. TOBACCO: SOURCE, UTILIZATION, AND DISTRIBUTION OF CONSUMER'S DOLLAR AND MARKETING MARGIN, 1939*

Source	*Per Cent*	
Production in United States	95.0	
Imports	5.0	
Total	100.0	
Utilization	*Per Cent*	
Domestic use:		
Cigarettes	38.4	
Smoking, chewing, etc	21.5	
Cigars	10.1	
Total domestic use	70.0	
Exports	30.0	
Total	100.0	
Distribution	*Consumer's Dollar, Cents*	*Marketing Margin, Per Cent*
Growers in United States	11.6	
Imported tobacco	3.6	
Dealers in leaf tobacco	1.2	1.4
Manufacturers	25.2	29.7
Federal- and state-excise taxes	36.0	42.5
Wholesalers	4.0	4.7
Retailers	18.4	21.7
Total	$1.00	100.0

*L. D. Howell and Wade P. Young, Marketing and Manufacturing Margins for Tobacco, pp. 4 and 8. U.S. Department of Agriculture Technical Bulletin 913, 1946.

When analyzed by costs, salaries and wages of various agencies accounted for 47.8 cents of the consumer's dollar; advertising, 4.2 cents; other expenses, 32 cents; leaving 8.5 cents for marketing profit. Clothing and industrial uses each absorbed about one-third of the cotton; household goods, a fifth.

Wool. The United States produces two-thirds of its wool requirements and imports one-third, which consists of carpet wool and some apparel wool (Table 47). In 1939 one-half of the wool was used for clothing, one-fourth for carpets and rugs, and the remainder for various purposes. As the consumer's dollar was divided the producer received 11.4

TABLE 46. COTTON: UTILIZATION AND DISTRIBUTION OF CONSUMER'S DOLLAR AND MARKETING MARGIN, 1939*
(Basis of 500-lb. Bale)

Utilization	Amount, lb.	Per cent
Tare	22	4.4
Waste (nonspinnable)	23	4.6
Clothing	173	34.6
Household goods	114	22.8
Industrial uses	168	33.6
Total	500	100.0
Distribution	**Consumer's dollar, cents**	**Marketing margin, %**
Cotton growers	7.5	
Ginners	0.7	0.8
Cotton merchandisers	2.1	2.3
Cotton manufacturers	17.2	18.6
Dyers and finishers	4.2	4.5
Manufacturers of apparel and household goods	30.9	33.4
Wholesalers	4.9	5.3
Retailers	32.5	35.1
Total	$1.00	100.0

*L. D. Howell, Marketing and Manufacturing Margins for Textiles, pp. 3 and 7. U.S. Department of Agriculture Technical Bulletin 891, 1945.

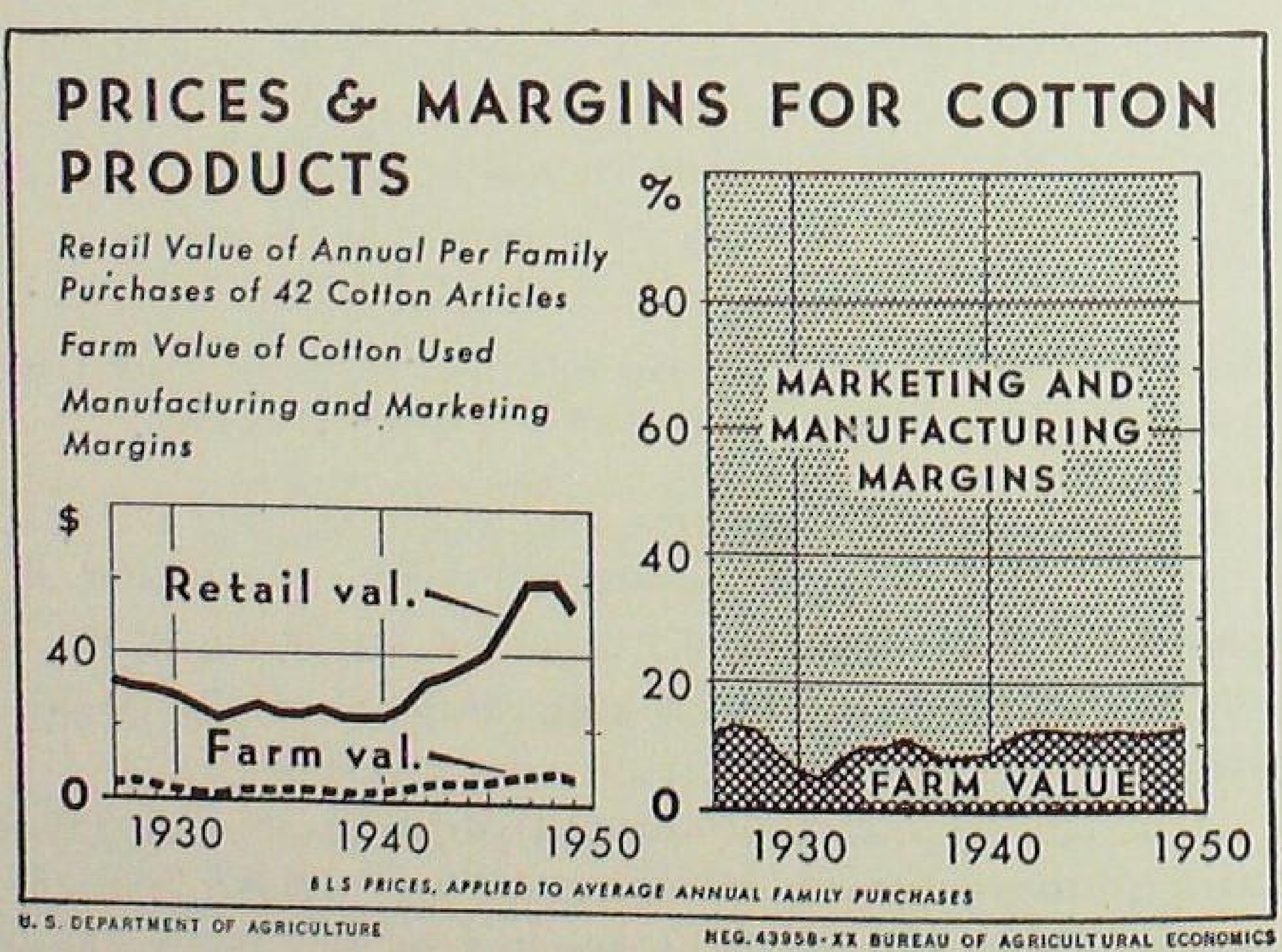

FIG. 21. For nonfood products the farmers' share of the consumer's dollar is less than for most food products. Processing and distribution of cotton products account for most of the retail cost.

cents, and the marketing margin was 88.6 cents. Processing and manufacturing took 50.1 cents and retailing, 33.8 cents. When the marketing margin was divided by cost items, salaries and wages took 46 cents; advertising, 3.8 cents; other expenses, 29.9 cents; leaving profits of 8.9 cents.

TABLE 47. WOOL: SOURCE, UTILIZATION, AND DISTRIBUTION OF CONSUMER'S DOLLAR AND MARKETING MARGIN, 1939*

Source	*Per Cent*
Production in United States	66.0
Imports:	
Apparel wool	9
Carpet wool	25
Total imports	34.0
Total	100.0

Utilization	*Per Cent*
Carpets and rugs	25.0
Felt hats	1.0
Knit goods	11.0
Blankets	4.8
Nonapparel fabrics	7.1
Men's suiting, panting, and overcoating	28.5
Women's coating, suiting, and dress fabrics	16.0
Other apparel fabrics	5.5
Other	1.1
Total	100.0

Distribution (Wool for Apparel and Household Use)	*Consumer's Dollar, Cents*	*Marketing Margin, Per Cent*
Wool producer	11.4	
Wool merchandisers	2.7	3.1
Manufacturers, dyers, and finishers of woolen and worsted fabrics and yarns	14.1	15.9
Manufacturers of apparel and household goods	36.0	40.6
Wholesalers	2.0	2.3
Retailers	33.8	38.1
Total	$1.00	100.0

* L. D. Howell, Marketing and Manufacturing Margins for Textiles, pp. 11 and 15. U.S. Department of Agriculture Technical Bulletin 891, 1945.

Hides and Skins and Products. About seven-eighths of the national supply of hides and skins is produced domestically and an equal proportion used for shoes (Table 48). The cost of hides and skins was 13.7 cents of the retail dollar, and this amount included some expense for assembling before tanning. Of the remaining 86.3 cents for marketing, shoe manufacturers and retailers received 71.4 cents, divided almost equally between them. On the basis of cost items, salaries and wages took 47.2 cents; advertising, 3.3 cents; other costs, 28.4 cents; and profits, 7.4 cents.

TABLE 48. CATTLE HIDES AND PRODUCTS: SOURCE, UTILIZATION, AND DISTRIBUTION OF CONSUMER'S DOLLAR AND MARKETING MARGIN, 1939*

Source of Hides and Skins	*Per Cent*	
Production in United States	88.0	
Imports	12.0	
Total	100.0	
Utilization of Products	*Per Cent*	
Shoes	87.7	
Harness and baggage	3.1	
Belting	3.0	
Upholstery	2.2	
Other	2.0	
Total domestic use	98.0	
Exports	2.0	
Total	100.0	
Distribution	*Consumer's Dollar, Cents*	*Marketing Margin, Per Cent*
Costs of hides and skins	13.7	
Tanners	10.2	11.8
Shoe manufacturers	36.2	41.9
Wholesalers	4.7	5.5
Retailers	35.2	40.8
Total	$1.00	100.0

*L. D. Howell, Marketing and Manufacturing Margins for Hides and Skins, Leather and Leather Products, pp. 3 and 6. U.S. Department of Agriculture Technical Bulletin 961, 1948.

The four nonfood products discussed above provide for the nation's tobacco requirements and a major share of its clothing needs. These products have a number of characteristics in common. For each the producer received a small share of the retail price, *i.e.*, the services added in marketing resulted in products which retailed for seven to fourteen times the value of the raw material. Each type of goods went through the hands of many kinds of middlemen and underwent much processing with a high manufacturing cost. Retailing costs were likewise high. Profits ranged from 7.4 to 10.3 per cent of retail cost, but no information is available as to how these profits were divided among the marketing agencies involved.

The Needs of the Marketing System

The marketing system for farm products has grown up without central direction except as limited by Federal regulations. Under our system of free enterprise most marketing agencies have been primarily interested in advancing their own economic welfare. The competition which results makes for efficiency of operation and contributes to the public interest. The agricultural and industrial development of the country has created many new problems in marketing, while the vicissitudes of two major

wars and a long-drawn-out depression within the last 35 years have called for many adjustments.

Improvements can and are being made at many points to reduce costs and to increase efficiency within the framework of the present system. Many studies relating to various phases of marketing are under way and these may be expected to point the way to still further improvements.

Summary

Marketing costs concern farmers as limiting their incomes, consumers as affecting the cost of living, and marketing agencies as defining their margins and profits. The farmer's share of the consumer's dollar spent for food varies greatly as between years, being highest in periods of high farm prices and lowest in depression years. At any time his share varies also as between products, being highest for products with a high ratio of value to bulk and with minimum marketing requirements, and lowest for those requiring much processing and with a long marketing chain.

The marketing margin covers all the expenses and profits of the marketing agencies and, of course, is that part of the consumer's dollar above the farmer's share. Of the agencies, in general, processors and retailers receive the larger shares. From the viewpoint of cost items, salaries and wages are the most costly part.

The nonfood products of tobacco, cotton, wool, and leather goods all involve much processing and pass through many different kinds of agencies; hence the marketing costs are high. With these products, also, processing and retailing are expensive; salaries and wages are the largest cost item, except for tobacco, for which the largest item is taxes.

QUESTIONS

1. Should the farmer's interest in his products cease when they leave his control? Why or why not?

2. What is the market basket of farm food products? Of what does it consist?

3. For food products in general, how is the consumer's dollar divided between the farmer and marketing services?

4. For what kinds of products does the farmer receive a large share? A small share?

5. How account for differences in marketing margins between products? For the same product at different price levels?

6. Does the farmer's share indicate whether marketing services are performed efficiently and at a reasonable cost?

7. What items account for the larger share of marketing costs? To what extent can they be reduced?

8. Who gets the benefits from improvements in marketing?

9. What food products are advertised extensively?

10. Why is advertising not used more widely for the products the farmer sells?

11. To what extent can a farmer control the quality of his products?

12. Under what conditions should he attempt to market products of high quality?

13. What new developments are taking place in the marketing of food products? Of nonfood products?

14. Do such developments tend to increase or decrease marketing costs? In what way?

15. Do they tend to increase or reduce the farmers' share of the consumer's dollar?

EXERCISE

The table below indicates for selected products the amount of the farm product necessary to produce the retail unit shown when adjustments have been made for by-products and losses in marketing. Secure local farm and retail prices for products marketed in your area, and calculate for each product what proportion the farmer is securing of the consumer's dollar.

Product	Farm quantity	Retail unit*
Eggs	1.03 doz.	1 doz.
Chickens	1.136 lb.	1 lb.
Whole milk	1 qt. (lb.)	1 qt.
Evaporated milk	1.95 lb. of whole milk	14½-oz. can
American cheese	10.08 lb. of whole milk	1 lb.
Navy beans	1 lb.	1 lb.
Potatoes	0.0174 bu.	1 lb.
White flour	0.0235 bu. of wheat	1 lb.
Soda crackers	0.0235 bu. of wheat	1 lb.
White bread	0.0152 bu. of wheat	1-lb. loaf
Corn flakes	0.0187 bu. of corn	8-oz. pkg.
Rolled oats	0.0641 bu. of oats	1 lb.
Canned corn	3.03 lb. of sweet corn	No. 2 can

* Data from U.S. Department of Agriculture Miscellaneous Publication 576, 1945.

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Chapter 10. COOPERATION IN AGRICULTURE

The term "cooperation," meaning working together, is very broad; as it refers to the cooperative movement its use is restricted.

"Cooperation is organized working together for mutual benefits. Economic cooperation is a form of business with democratic ownership and control by member patrons having common needs, serving themselves on a non-profit basis, and receiving benefits proportional to participation."[1] Cooperation has developed along somewhat different lines in various countries. In the United States agricultural cooperatives have been most important; in Europe, consumers' cooperatives have led.

In the United States cooperation in agriculture has developed primarily because most farmers as individuals operate on too small a scale to market their products or obtain supplies or services advantageously. Dissatisfaction with existing agencies because of low returns received, wide marketing margins, inadequate services, and unfair treatment has been a further stimulant.[2]

The Cooperative as a Business Unit

As a business unit a cooperative differs from other forms of business. Four kinds of business units are commonly recognized: individual proprietorship, partnership, corporation, and cooperative. The individual proprietorship or one-man business is illustrated by a farm or an individually owned grocery. The individual is the sole owner; he controls the policies and finances; he receives all the net profits and is personally liable for the losses. The business is limited to the life of the proprietor. The partnership has two or more joint owners and proprietors. They determine, usually by written agreement, what each is to contribute and in what way profits and losses are to be shared. Each partner is personally liable not only for his own acts, but also for the business actions of the other partners. The business ceases with the death or withdrawal of a partner.

[1] Ward W. Fetrow and R. H. Elsworth, Agricultural Cooperation in the United States, p. 4. Farm Credit Administration Bulletin 54, 1947.

[2] Henry H. Bakken and Marvin A. Schaars, The Economics of Cooperative Marketing, p. 2.

The corporation is a "legal person" separate from the persons who own and control it. Capital is the dominating feature. The common stockholders own and control the organization; they may be few or many in number, but each share of stock entitles its owner to one vote. There is no limit upon earnings which are divided among those who furnish the capital. The liability of each owner is limited to his investment. The corporate unit provides for centralized responsibility for management and continuity of life of the organization; it may secure funds from many sources. It is subject to certain legal restrictions and to Federal and state taxes.

A cooperative is distinguished from other business units by three fundamental characteristics which are inherent in its make-up. These are:

1. Democratic control by members.
2. Limited payment for capital.
3. Benefits and savings shared by members in proportion to their patronage.[3]

In order to secure limited financial responsibility most cooperatives are incorporated under state laws.

In a cooperative the interests of its member participants are the dominating feature. These interests are implicit in the characteristics given. Democratic control protects the members against a concentration of control by one or a few. It is achieved by limiting the voting privilege. The most common method of limitation is the one-member–one-vote rule, as is now provided for by law in most states. Other methods provide for voting by shares, but limit the number of shares an individual may hold, or proportion voting to patronage.

Limited returns on capital allow for a nominal return for the use of capital needed in the cooperative, but do not confer the principal benefits of the organization upon those who provide capital as does the corporation. The sharing of benefits and savings by members in proportion to their patronage provides that those who make most use of the cooperative receive the greatest returns. Cooperatives operate on a cost basis; the benefits from financial operations result in savings (or losses) rather than profits. These savings are distributed as patronage refunds. Cooperatives of a service type may provide services rather than savings.

Characteristics of Cooperatives

The characteristics listed above—democratic control by members, limited payment for capital, and benefits and savings shared by members in proportion to their patronage—are basic. There is, however, no magic in cooperation; a cooperative is also subject to business hazards. Through

[3] Fetrow and Elsworth, *op. cit.*, p. 10.

long years of experience and many failures desirable operating policies have been developed regarding "the method of voting used by an association, qualifications necessary for membership, policies regarding patronage refunds, ownership of stock, allocation of reserves, price policies for commodities sold or purchased, use of a revolving fund, and keeping members adequately informed."[4] Of course, a cooperative like any business needs strict control if credit is granted, reserves adequate for its business, complete financial records regularly audited, and competent and trustworthy management.

Federal and state laws also help to shape cooperatives by defining their rights and limitations. In general, cooperatives developed before legislation was enacted; hence legislation tended to confirm principles and practices already established. Fortunately the legislation adopted in many states is quite uniform.

From these principles, practices, and laws the tests for a cooperative have been defined as follows:[5]

1. An association should be actually owned and actually controlled by its member-patrons on a democratic basis.
2. The members of an association should be members not as investors but as patrons.
3. The dividends or interest on the capital of the association should be restricted to not to exceed 8 percent per annum.
4. All patrons, under like conditions, should receive the same treatment and be paid on a comparable basis.
5. Savings or overcharges or underpayments should be returned to the patrons on a patronage basis.
6. The capital or reserves which are accumulated by an association should be allocated to the patrons on a patronage basis, and the organization papers of the organization should definitely show that the patrons have a contingent interest in such accumulations.
7. Not over one-half of the business of an association should be done with nonmembers.

In practice many cooperatives do not fully meet these tests.

The Development of Cooperation

Early Development. The first successful cooperative was organized at Rochdale, England, by a group of 28 laborers. These people, mostly weavers, systematically saved from their meager wages until at the end of a year they had accumulated £28 ($136), with which they opened a small store in 1844. At first they handled flour, butter, sugar, and oatmeal.

[4] *Ibid.*, p. 13.
[5] *Ibid.*, pp. 4–5.

The next year, cheese, tobacco, and meat were added. The store was open at first two nights a week, the members acting as clerks, without pay. By 1852 the store had greatly expanded and handled nearly all kinds of groceries as well as shoes and clothing.[6] From this humble beginning the organization grew to 1,400 members in 1855; 5,326 in 1865; and 8,892 in 1876. Meanwhile similar organizations arose in other cities, leading to the Cooperative Wholesale Society of England which by 1935 had more than 6 million members and a capital of 104 million pounds.[7]

The success of the Rochdale cooperative resulted largely from the basic principles put into practice, although not formally recorded; these were:[8]

1. One man, one vote.
2. Dividends on capital stock limited to current interest rates.
3. Earnings divided in proportion to patronage.
4. Goods sold at regular retail prices.
5. Business conducted on a cash basis.
6. Number of shares which one member might own limited.

Some writers add others, important among which was an educational fund to teach principles of cooperation.

These basic principles established in practice more than a century ago by a small consumers' cooperative have influenced greatly the development of all types of cooperatives. The first three are still essentially the guiding principles of cooperatives.

In addition to those in Great Britain consumer cooperatives have developed extensively in a number of other European countries—Czechoslovakia, Denmark, Finland, France, Norway, Switzerland, and Sweden. Frequently they engage in processing as well as wholesaling and retailing. In Europe farmers' cooperatives have developed to a lesser extent, Denmark being the best example.

Development in the United States. In the United States cooperation has been largely a farmers' or producers' movement. Consumer cooperatives have developed very slowly as a result of the growth of chain stores, mail-order houses, and higher purchasing power of consumers which rendered small savings less important. Cooperative development here falls into six fairly well-defined periods.[9]

1. Before 1870, period of experimentation. Organizations were formed to produce cheese and butter, to market farm products, and to buy farm supplies. They were local in character and generally short-lived.

[6] H. Clyde Filley, Cooperation in Agriculture, pp. 18–22.

[7] Bakken and Schaars, *op. cit.*, p. 36.

[8] Filley, *op. cit.*. pp. 21–22.

[9] Bakken and Schaars, *op. cit.*, pp. 66–70; Fetrow and Elsworth, *op. cit.*, pp. 1–3.

2. Period of Granger activity, 1870 to 1880. Reference has been made in the chapters on historical development to the wide range of cooperative activities undertaken by the Grange and other farmers' organizations. Marketing, purchasing, manufacturing, and banking were among the ventures. Failures were many and costly.

3. Period of inactivity, 1880 to 1895. With the waning of activity and influence of the Grange, the spread of cooperative organization was limited to that of the Farmers' Alliance in the South and some localized activity in isolated spots.

4. Period of gradual expansion, 1895 to 1920. This period was marked by the organization of large numbers of local associations of both marketing and purchasing types, representing every important type of commodity. Impetus was given by public recognition, establishment of a cooperative marketing project in the newly created Federal Office of Markets, and the setting up of the Agricultural Extension Service.

5. Period of rapid expansion, 1920 to 1930. The postwar depression increased farmers' troubles. Against this background the proposals to create large-scale associations to handle the entire output of specified crops involving monopoly control and monopoly prices took hold. The number of large-scale centrally controlled cooperatives increased from 16 with 49,746 members at the close of 1920 to 74 with 879,190 members at the end of 1925. In 1929 the Federal Farm Board came into the picture and endeavored to organize producers of commodities into cooperatives on a national scale. The expansion included local, regional, federated, and centralized associations. New laws, Federal and state, favored their growth as did widespread public attention.

6. Period of adjustment and readjustment (1930 to date). The depression of the thirties was a severe test and resulted in liquidation of some associations, modifications in organization, and consolidation of local units into larger groups. Livestock marketing groups were particularly affected by the growth of truck transportation and decentralization of buying points. These trials reduced the number of associations but made necessary a high class of leadership, improved operation methods, and higher business standards. Upon this more efficient basis further expansion into new fields has occurred. The years since 1940 have been very favorable. That they may have contributed to some laxity in policies and to unwarranted expectations on the part of members is indicated by the insistent emphasis of leaders on more education of members in the principles of cooperation.

Types of Farmers' Cooperatives

Cooperatives may be classified in various ways. From the standpoint of area covered, reference has been made to local, regional, and national

organizations. The local group, as its name implies, covers a quite limited area with individual farmer members; the national group, likewise, applies to country-wide interests; while the regional group covers intermediate areas of larger or smaller extent.

By type of membership, associations are federated or centralized. The federated type is built from the ground up, *i.e.*, farmers make up the membership of the locals, local associations make up a district association, and several of the latter in turn make up the central overhead organization. The central body or federation goes much farther in its activities than the locals. Under the centralized system farmers are directly members of the central organization in which control is vested; there are no local associations. The individual farmers own the central association, sign contracts with it, deliver their products to its warehouses, and elect delegates by districts to represent them. It is constructed from the top down.

From the standpoint of functions performed farmer cooperatives may be classified into marketing, or the performance of services between producer and consumer; purchasing, or acquiring supplies for farm operations; production, or activities relating to carrying on farm operations; and farm business service, or providing services which contribute both to the farm business and the welfare of the farm family.[10] Each of these types will be developed more fully, although the lines of distinction often are not clean cut in practice.

How Extensive Is Farmer Cooperation?

There is no complete roster of farmers' cooperatives in the United States. Materials which have been compiled from many sources by the Farm Credit Administration give a general picture (Table 49). That source estimates the active cooperatives at more than 40,000 and participants at 8 million or more.[11] Obviously much duplication occurs, inasmuch as most cooperatives serve a limited purpose and a farmer may be a member of several groups. It is estimated that about one-half the farmers belong to some cooperative. Because of the diverse character of cooperatives neither number of associations nor size of membership affords a valid basis for comparison. The more numerous are the associations in marketing, irrigation, purchasing, telephone, fire insurance, dairy-herd improvement, and farm-loan lines, each of which had more than a thousand organizations. Estimated membership exceeded a million each for fire insurance, marketing, bank for cooperatives, purchasing, and power and light groups.

Dollar values are available only for the marketing and purchasing groups

[10] Fetrow and Elsworth, *op. cit.*, p. 14.

[11] Grace Wanstall, Statistics of Farmers' Marketing and Purchasing Cooperatives, p. 5A. Farm Credit Administration Miscellaneous Report 119, June, 1948.

through voluntary annual reports which most associations make to the Farm Credit Administration. Data for the 1946–1947 marketing season showed a volume of business in marketing of 6 billion dollars and in

TABLE 49. FARMERS' COOPERATIVES: TYPES, NUMBER, AND MEMBERSHIP, UNITED STATES[a]

Type	Number of associations	Estimated members or participants (thousands)[b]
Marketing:		
Marketing (1946–1947)[c]	7,268	3,378
F.S.A.-financed marketing associations (Aug., 1945)	245	44
F.S.A.-financed purchasing and marketing associations (Aug., 1945)[d]	546	70
Purchasing:		
Purchasing (1946–1947)[c]	2,857	2,058
F.S.A.-financed purchasing associations (Aug., 1945)	80	14
Production:		
Mutual irrigation companies (1940)	4,432	148
F.S.A.-financed service cooperatives (Aug., 1945)	243	117
Dairy herd improvement associations (Jan., 1947)	1,426	29
Dairy bull associations (Jan., 1947)	140	2
Dairy cattle artificial breeding associations (Jan., 1947)	608	141
Grazing associations (1946)	40	2
Indian enterprises (Oct., 1946)	225	12
Service:		
National farm loan associations (July, 1947)	1,279	325
Production credit associations (June, 1947)	504	404
Banks for cooperatives (June, 1947)	13	2,239[e]
Rural credit unions (1944)	680	100
Farmers' mutual fire insurance companies (1944)	1,847	3,500
Mutual telephone companies (1937)	2,067[f]	669
Electric power and light associations (Dec., 1946)	795	1,595
Farmers' burial associations (1946)	44	38

[a] Grace Wanstall, Statistics of Farmers' Marketing and Purchasing Cooperatives, p. 5A. Farm Credit Administration Miscellaneous Report 119, June, 1948.

[b] Rounded to nearest thousand.

[c] *News for Farmer Cooperatives* (Farm Credit Administration, Washington), Vol. 15, No. 8, November, 1948, p. 18.

[d] Amount of marketing and purchasing equal.

[e] Members and other patrons of associations borrowing from banks for cooperatives.

[f] Companies with switchboards.

purchasing of 1.1 billion dollars (Table 50). Marketing organizations for grain and dairy products were most numerous and led in volume of business. In number of members livestock groups stood highest, followed by dairy product and grain groups.

The total number of marketing and purchasing associations increased steadily up to 1929–1930, when 12,000 were reported.[12] Since then the total number has declined steadily to 10,125 in 1946–1947. This change has taken place in two directions: marketing groups declined in number from 10,546 to 7,268, a reduction of 39 per cent, while purchasing groups practically doubled. That the reduction in number of marketing associations reflects primarily a consolidation of groups is indicated by the fact that membership varied from slightly above to 12 per cent below the 2.6 million figure of 1929–1930 until 1942–1943, after which still higher figures were recorded each year. Members in purchasing groups doubled from 1929–1930 to 1940–1941, then increased by nearly three times during the war and early postwar period. Dollar values for both groups increased steadily from the low point of the early thirties, reflecting the changes in price levels as well as in volume.

TABLE 50. COOPERATIVE MARKETING AND PURCHASING BY COMMODITY GROUPS, 1946–1947 MARKETING SEASON*

Type of association	Number of associations	Number of members (thousands)	Volume of business (millions)
Marketing:			
Cotton	525	284	$234
Dairy products	2,132	746	1,746
Fruits and vegetables	937	168	826
Grain, dry beans, rice	2,224	602	1,918
Livestock	572	860	790
Nuts	41	65	59
Poultry and eggs	148	127	225
Tobacco	15	239	70
Wool and mohair	127	109	34
Miscellaneous	547	177	103
Total marketing	7,268	3,378	$6,005
Purchasing	2,857	2,058	1,111
Total purchasing and marketing	10,125	5,436	$7,116

* *News for Farmer Cooperatives* (Farm Credit Administration, Washington), Vol. 15, No. 8, November, 1948, p. 18.

The geographical distribution of marketing and purchasing cooperatives is by no means uniform. The heaviest concentration of commodity groups, as listed in Table 50, of course is in the areas of heaviest produc-

[12] Grace Wanstall, Statistics of Farmers' Marketing and Purchasing Cooperatives, 1945–46, p. 1. Farm Credit Administration Miscellaneous Report 119, June, 1948.

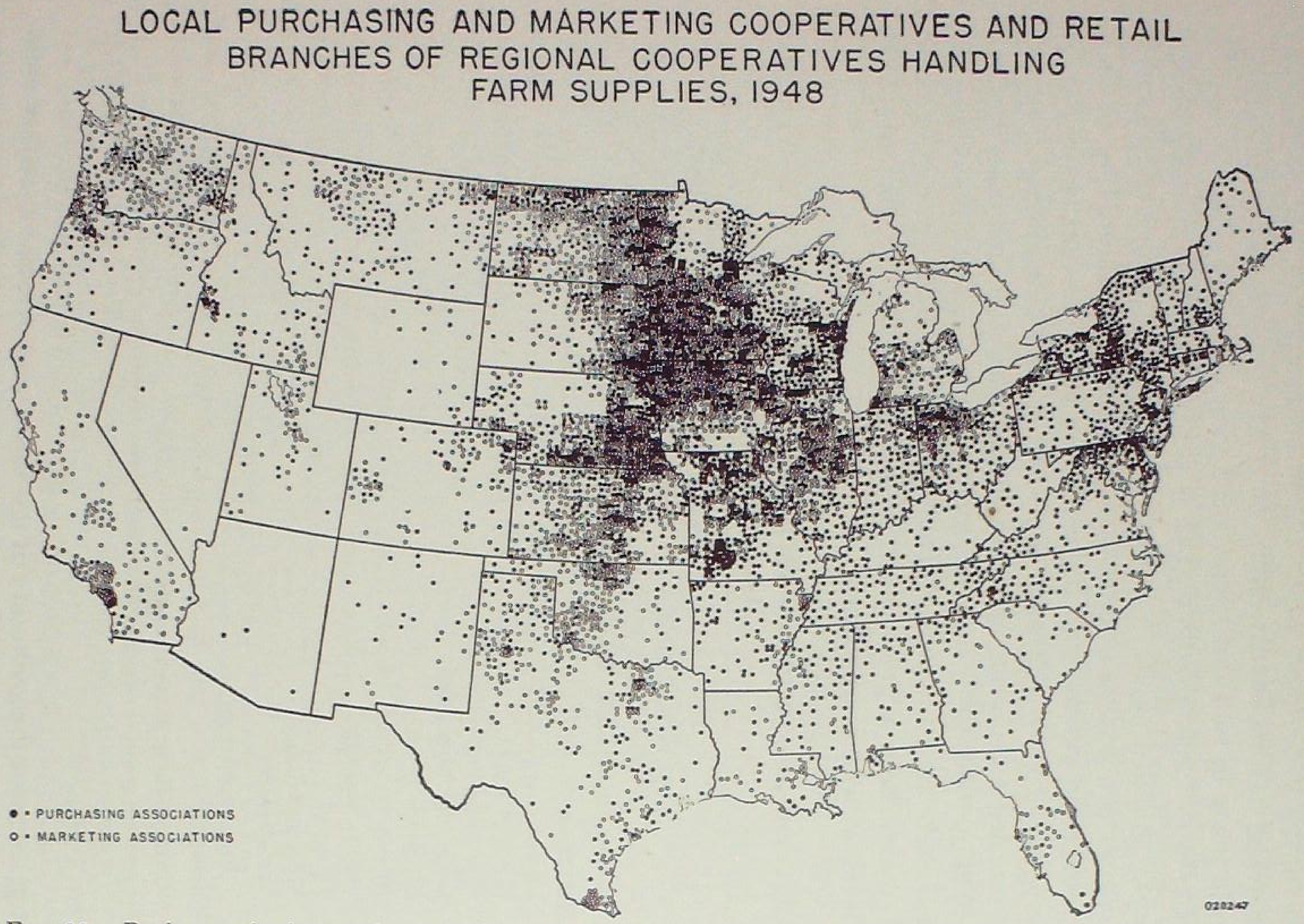

FIG. 22. Both purchasing and marketing cooperatives are heavily concentrated in the Middle West. Purchasing associations are rather widely distributed through the Eastern states while marketing associations are more localized in the Western states. (*Source: Farm Credit Administration.*)

tion (Fig. 22). Thus the 12 states in the north-central group include the larger proportion of the cooperatives in dairy, grain, and livestock lines. These states included 62 per cent of the associations, 59 per cent of the membership, and 54 per cent of the business in 1946–1947.[13] Outside this area the distribution was much more uniform with lesser concentrations on the Pacific Coast, in Oklahoma and Texas, and in Florida. Some other types of associations are likewise regionalized, as the irrigation groups in the Mountain and Pacific states.

Activities of Farmer Cooperatives

Marketing Cooperatives. Cooperative marketing has been applied to some extent to all important farm products. In practice many marketing groups perform some functions other than marketing such, for example, as supplying containers for the products marketed. Any adequate analysis of marketing through cooperatives would require an examination of each of many commodity groups, to present its historical development, scope, problems, and achievements. The limits of the present treatment will permit only some generalizations which will apply to a greater or less degree to a number of commodity lines.

Cooperative marketing was first applied to the farmers' end of the marketing chain. These local associations, composed of farmers within a rather short distance of an elevator or shipping point, perform chiefly the function of local assembling. They are interested also in proper grading, volume handling, and efficient operation, all to the end of returning the maximum amount to the producer. The competition provided by these local cooperatives has had a salutary effect upon the marketing margins and services of other local buyers. As indicated earlier under costs of marketing, these local aspects have limited possibilities in cost reduction.

The trend, therefore, has been to carry the products through further steps in the marketing channel. To this end larger scale cooperatives have been set up, chiefly to carry assembling into the central markets and to sell products there on a volume basis. These have taken many forms with different products, as for example, bargaining associations and terminal, regional, and national sales agencies. These larger organizations contribute to lower costs in marketing and securing satisfactory returns for producers in many ways. Among these are large volume which minimizes handling costs; representation for producers; a technically trained sales staff; maintaining broad market outlets in the domestic market and for some products export outlets; stabilization of markets, general improvement of marketing conditions and facilities; payment based on quality;

[13] Grace Wanstall, *News for Farmer Cooperatives* (Farm Credit Administration, Washington), Vol. 15, No. 8, November, 1948, p. 19.

hedging services as a protection against market fluctuations; and avoidance of competition among cooperatives. In addition these organizations often provide services related to transportation, legal assistance, market information, and credit.

In connection with these associations some storage and warehousing is provided. Examples are cotton, grain, wool, tobacco, and rice. In general, processing functions are limited. Illustrations are found in cotton ginning and compressing; processing cottonseed; manufacture of dairy products; canning of fruits, vegetables, and fruit juices; and recently some dehydration. Little progress has been made in major processing lines which require large investments such as meat packing. The one outstanding example of cooperative activity in distribution lines on a national basis is that of citrus fruits. Some more localized distribution occurs as of dairy products, chiefly at the wholesale level.

Marketing cooperatives are in direct competition with other marketing organizations performing the same functions. There is, of course, no reason to organize a cooperative if other agencies are rendering adequate service at reasonable cost. Cooperatives, moreover, must continually justify their existence through providing lower costs, better service, or higher quality than their competitors. The proportion of products marketed cooperatively varies greatly. Of the major commodities cooperative handling is most highly developed for citrus fruits and represented somewhat less than half the total output in 1945–1946.[14] For most products the proportion is much less. The total value of farm products handled by marketing cooperatives in 1946–1947 represented one-fourth of farm sales for 1946 or about one-fifth of those for 1947. The idea of commodity control so prevalent in the early twenties is no longer considered necessary or desirable. The controls which cooperatives once sought through monopoly are attained through well-managed and efficiently operated organizations by which standards are established for costs, services, and quality.

Purchasing Cooperatives. Cooperatives which purchase supplies for farm production start with the distribution end of farmers' needs. They handle products of both farm and industrial origin. From an area standpoint four levels appear, the local, wholesale, regional, and federations of regional associations. Local groups arose first to distribute products bought in regular trade channels. A few were of the centralized variety. The larger scale associations developed later, especially after the organization of the bank for cooperatives in 1933 made ample financing available. These larger groups became the chief suppliers of the local organizations.

The major products handled by local groups are petroleum, feeds, seeds,

[14] Fetrow and Elsworth, *op. cit.*, p. 70.

fertilizers, automotive supplies, farm machinery, metal products, and paint. Many local groups handle a single line or related lines. In addition such groups may engage in feed grinding and mixing, seed cleaning and treatment, fertilizer mixing, or machinery repair.

Above the local groups are the wholesale or minor regional groups who operate on a larger scale to secure supplies for the local groups. The regional purchasing associations, most of which are federations of local groups, operate on a still broader basis. They combine purchasing on a large volume basis and processing. Processing or manufacturing plants include feed mills, fertilizer factories, and plants manufacturing shipping containers.

Regional associations have formed federations to pool their purchasing power in buying manufactured goods and for manufacturing their own supplies. These organizations buy on a huge scale, contract for manufacturing under their own specifications and labels, and engage in production. Processing plants include flour mills, feed mills, fertilizer factories, seed plants; oil wells, refineries, and pipe lines; farm-implement factories and the like.

The trend has been to invade the processing field as well as distribution through wholesale and retail channels. Processing and retailing are high-cost areas in marketing, hence susceptible to material savings. Purchasing associations like those in marketing are in competition with other business firms. Most purchasing associations reflect the savings to their members in patronage refunds rather than by underselling which antagonizes their competitors and incites price wars.

Purchasing activities are often associated with marketing activities to increase the volume of business, to help distribute overhead expense, and to level out seasonal fluctuations. In purchasing, as in marketing, quality is important. The designation of quality by distinctive trade names has been accomplished in some lines because of the volume attained under cooperative purchasing.

Cooperatives in Farm Production. Organized cooperative activity has been applied to several lines of farm production, as indicated in Table 49. Most numerous are the mutual irrigation companies in the Mountain and Pacific areas. These are voluntary groups as contrasted with irrigation districts in the arid sections and soil-conservation districts in the more humid sections of the country. While districts of these two types bear some similarity to cooperatives, they are not voluntary. Upon petition of farmers in a projected district an election is held, and a majority can vote in a minority as members. Thus farmers are not free to join or withdraw.

Production-improvement cooperatives are also widespread. Dairy im-

provement is advanced by cooperatives for testing cows, for owning high-grade bulls, and for artificial breeding. Through these means the quality of dairy animals and efficiency of milk production are increased. Cotton-production groups provide a corresponding service through adoption of a single variety of adapted cotton, seed distribution, and selling on the basis of graded samples.

In these and other similar activities cooperative action affects directly the kind and amount of production. Group action makes available at reasonable cost production services which would otherwise be prohibitive in cost and in many cases unattainable at any cost.

Farm Business Service Cooperatives. Farm business service cooperatives contribute to the welfare of the farm family as well as to the farm business. The more numerous of these services are those relating to credit, insurance, electricity, and telephone (Table 49).

Cooperative credit is available through Federal credit unions which operate on a limited scale; credit corporations which operate in connection with marketing cooperatives to provide loans on livestock; independent credit organizations serving farmers in certain areas; and the government-sponsored Farm Credit Administration. The latter was organized in 1933 to afford relief to depression-stricken agriculture. Its four branches are designed to supply all kinds of agricultural credit needs. The Federal land banks through the national farm loan associations provide long-time amortized mortgage credit; the production credit corporations through the local production credit associations make credit available for farm operation; the bank for cooperatives finances cooperative associations; and the Federal intermediate credit bank discounts agricultural paper for various financial institutions. The last two do not make loans to individuals.

In the insurance field protection against fire losses is the most common. Organizations range in size from a single community to those covering a state or even larger areas. Protection against other hazards has been developed in some areas in the form of insurance on automobiles and trucks, liability and accident coverage, life insurance, and some for windstorm and tornado damage.

Farm electrification made little progress prior to the inauguration of the cooperative rural electrification program by the government in 1935. Subsequent development has been rapid with service available to more than a quarter of the country's farms, and to a very high proportion of farms in some areas. It is doubtful if any development within this period has done as much to relieve drudgery and to raise home standards.

Telephone service is also widely available through cooperatives. The large number of associations listed in Table 49 are farm mutual operating companies which provide their own switchboards; a much larger number

operate local or rural lines leading into switchboards which are not owned or operated by the cooperatives.

Among other lines of service rendered by this type of cooperative are cold-storage locker plants, health plans, transportation services usually in connection with marketing or purchasing groups, and burial associations.

Problems of Farmers' Cooperatives

Although a current review of farmers' cooperatives in the United States shows marked accomplishment in many lines, their problems are by no means solved, nor have they arrived at the present state without hardship. In the period 1901 to 1940, 15,270 marketing and purchasing cooperatives discontinued operations.[15] That number is one and one-half times the present number of active associations. A substantial number ceased operation because of the consolidation of small local groups into larger units; others, because of problems which they could not surmount. The major reasons ascribed to failures were management difficulties, membership difficulties, natural or unavoidable causes, insufficient business, financing and credit difficulties, transportation problems, competition, and declining prices.[16] The depression years 1931 to 1935 took the heaviest toll.

In the earlier years cooperatives were often isolated with little opportunity to learn or apply the experiences of others. Present-day groups have a marked advantage in this respect. In some 30 states cooperative councils have been organized, and at the national level a National Council of Farmer Cooperatives, The American Institute of Cooperation, and the National Association of Cooperatives all render service. In addition, substantial help is provided by the Cooperative Research and Service Division of the Farm Credit Administration, the Agricultural Extension Service, and the national farmers' organizations. Through these agencies much information is available regarding the experiences of other groups, ways of appraising the need for organization, and desirable methods and operating policies. Such information does not guarantee success, but it limits the problems to be solved on a trial-and-error basis.

The aggregate size of cooperative business creates problems, not only those of managing large enterprises and maintaining contact with members, but of jealousy on the part of business enterprises who would like to have the business which is performed by cooperatives.[17] For example, the

[15] R. H. Elsworth, Some Fall by Wayside as Co-ops Grow Larger. *News for Farmer Cooperatives*, Vol. 14, No. 7, October, 1947, p. 10.

[16] Fetrow and Elsworth, *op. cit.*, p. 189.

[17] Clinton P. Anderson, A Little Cloud out of the Sea. *News for Farmer Cooperatives*, Vol. 14, No. 10, January, 1948, pp. 3–4.

charge has been made recently that cooperatives have an unfair advantage because they are "largely tax free." In reply, Mr. E. A. Stordyk states,[18]

> Cooperatives pay all the taxes any partnership or corporation pays except capital stock taxes and income taxes, provided they have no income. They pay property taxes, sales taxes, gasoline taxes, telephone taxes, transportation taxes, franchise taxes; in fact all the taxes that any individual or corporation pays. Some cooperatives which do a substantial amount of business with non-members and make an income therefrom pay income taxes at the same rate as profit corporations.

Cooperatives with no income, of course, have no income tax to pay. Only about half of the marketing and purchasing associations have considered it worth while to qualify for income-tax exemption.[19] Some that have qualified are foregoing this privilege. The question of exemption of taxes on capital stock is not so clear. The whole tax question needs further study. Behind this front the struggle for business remains. Only through the large-scale cooperatives can farmers hold their own against business corporations.

The problems of internal policy—efficient management, business volume, membership support, sound financing, quality of products, and adequate records—are ever present. In fact they are likely to become more acute as the lush conditions of the high-price war and postwar years give way to lower prices and keener competition while operating expenses remain high.

A still broader problem confronts cooperatives, for they are more than economic institutions. They exert social influences not only upon their members, but upon the communities in which they are located. These broader influences upon people and their interpretation of democracy in action need study for they are ill-defined and little understood.

An Illustration of Coordinated Cooperative Activities

From the earliest days of the Grange, farmers' organizations have sponsored cooperative activity in various ways. Present affiliations vary with the farmers' organization concerned and with the cooperative organization of the area. An illustration of close coordination is afforded by the farm bureau organization in Illinois in which the larger scale cooperatives are set up on a state basis as affiliates of the Illinois Agricultural As-

[18] Public Interest in the Cooperative Controversy, p. 15. American Institute of Cooperation Pamphlet, October, 1945.

[19] L. S. Hulbert, Following Cooperative Principles and Law. *News for Farmer Cooperatives,* Vol. 15, No. 3, 1948, p. 7.

sociation, which is the state farm bureau organization, while the local associations are set up largely on a county basis and are associated with the county farm bureaus.

Cooperatives	*Activities and Facilities*
Marketing	
Illinois Livestock Marketing Association	Marketing livestock in connection with producer agencies and local associations
Illinois Wool Marketing Association	Marketing and warehousing wool
Illinois Grain Corporation	Regional brokerage and commission service for co-op elevators. Terminal facilities in Chicago and grain-handling elevators on Illinois and Mississippi rivers
Illinois Milk Producers Association	Coordination and service for milk marketing co-ops; purchasing dairy supplies
Prairie Farms Creameries	Processing and wholesaling dairy products
Illinois Fruit Growers Exchange	Marketing fruit; market information; purchasing orchard supplies
Purchasing	
Illinois Farm Supply Company	Purchasing and manufacturing petroleum products, feeds, plant foods, paints, supplies. Oil refinery, storage plant, oil barges, tow boats. Feed-mixing plants, fertilizer plants
Illinois Farm Bureau Serum Association	Purchasing serum and virus
Service	
Country Mutual Casualty Company	Insurance—automobile, employers' liability, 4-H club calf, cargo
Country Mutual Fire Company	Insurance—fire, windstorm, hail
Country Life Insurance Company	Insurance—life
Illinois Cooperative Locker Service	Locker facilities and service to local co-ops
Illinois Agricultural Auditing Association	Accounting and auditing service for state and local co-ops
Illinois Agricultural Service Company	Management service for affiliated co-ops
Illinois Agricultural Holding Company	Farmer ownership and control of Country Life Insurance Company

The state-wide cooperatives affiliated with the Illinois Agricultural Association and their major activities and facilities are as follows:[20]

Corresponding cooperatives at the local or county level vary with major lines of production. Champaign County, one of the larger counties in the cash-grain area, will serve for illustration:[21]

[20] Handbook for Employees, Illinois Agricultural Association, Chicago, 1945; and current issues of Illinois Agricultural Association Record.

[21] Annual Reports, Champaign County Farm Bureau and Associated Companies, 1945–1948; and current issues of Champaign County Farm Bureau News.

Cooperatives	*Activities and Facilities*
Marketing	
Champaign County Grain Association	Marketing grains; 3 local elevators
Champaign County Livestock Marketing Association	Marketing livestock. Concentration yard and assembling trucks
Champaign County Milk Producers	Marketing and processing dairy products
Purchasing	
Champaign County Service Company	Distributing motor fuel, oil, tires, batteries, paint. Bulk stations, delivery trucks, city service stations
Champaign County Feed Company	Distributing feeds, fertilizers, steel equipment. Warehouse and trucks
Champaign Producers Supplies	Distributing serum and virus, inoculation, sprays, insecticides
Service	
Co-op Locker Service of Champaign	Locker service—processing, storage
General and special agents	Insurance—fire, automobile, life, hail, windstorm, accident
Area and Independent Co-ops	
Producers Creamery of Champaign County (part of state organization—covers 10 counties)	Processing dairy products
Illinois Electric Cooperative (covers 7 counties)	Farm electric service
Northern Illinois Dairy Breeding Co-op	Artificial breeding, cooperation with other associations
3 Dairy Herd Improvement Associations (local)	Testing dairy cows
5 local elevators (independent)	Marketing grain

Some cooperatives of a local or area type are not an integral part of the cordinated county and state setup. Members of the county farm bureau are eligible to membership in the associated cooperatives. The advantages of such a coordinated plan over local independent organizations are evident in the broader area of activities, the volume of business, administrative and financial assistance, and support of a large and strong farmers' organization.

Summary

Agricultural cooperation is the means by which many farmers with small businesses acquire through joint action the advantages of larger scale organizations. As business units they differ from other forms in methods of control, payment for capital, and distribution of benefits. Laws and business practices developed from experience likewise shape their character.

Farmers' or producers' cooperatives are characteristic of the United States, although they have much in common with the principles of the consumers' groups first successfully developed by the Rochdale pioneers

of England. About half of the farmers here belong to cooperatives, though many belong to several organizations serving different purposes. The heaviest concentration of business groups is in the North Central states.

Cooperative activity has been successfully applied to marketing of all the major farm products about a fourth of which move through these organizations; to the purchase, production, and distribution of a wide range of farm supplies; to the extension of farm production into arid areas by irrigation and to production improvement in various lines; and to providing many kinds of service useful alike to the farm business and the farm home.

Cooperatives face the ever-present problems of keeping themselves truly cooperative, of maintaining sound and efficient business practices, and of holding their own against outside competition. The organization of cooperatives has been generously aided by national farmers' organizations, and through these associations many lines of cooperative activity have been coordinated to provide strong associations serving a broad range of farmers' interests.

QUESTIONS

1. What is agricultural cooperation?
2. Why do farmers cooperate? Why do they not do so?
3. What can cooperatives do? What can they not do?
4. Distinguish between various types of cooperatives.
5. Why was the early development of cooperatives applied to consumers in Europe and to farmers in the United States?
6. What proportion of our farm production is handled by farmers' marketing cooperatives?
7. How many farmers' cooperatives are there in the United States?
8. List kinds of cooperatives with more than 1,000 associations.
9. In what parts of the country are farmers' buying and selling cooperatives most numerous? Where fewest?
10. What aid, if any, does the government provide for farmers' cooperatives?
11. Should the government assist cooperative marketing? Should it aid other types of marketing?
12. Classify by type the farmers' cooperatives which are functioning in your home community.
13. List any nonfarmer cooperatives in your area.
14. How far in the marketing process do cooperatives carry various kinds of farm products? Illustrate.
15. What objectives must cooperatives fulfill to justify their existence?
16. List problems involved in making a cooperative successful.
17. Why is the farmers' cooperative movement under attack?

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Chapter 11. FOREIGN TRADE IN AGRICULTURAL PRODUCTS

The term "foreign trade" applies to trade between the United States and foreign countries. The noncontiguous territories of Alaska, Hawaii, Puerto Rico, and the Virgin Islands are included as part of the United States. The Philippine Islands, since their independence, are foreign territory.

Foreign trade is classified broadly as agricultural and nonagricultural. Forest products and distilled liquors are considered as nonagricultural products. While our interest is directed primarily toward foreign trade in agricultural products, this phase needs to be considered in the broader setting of total foreign trade. Too often farmers and legislators alike have looked upon foreign trade simply as a means of disposing of our surpluses. In fact, it involves the question of surpluses and deficits in all countries of the world. Our treatment will necessarily be limited to the importance of foreign trade, the basis for it, the restrictions on it, the balance of international payments, influences affecting our trade, trends in our exports and imports of farm products, the major items involved, and the postwar position of the United States.

Importance of Foreign Trade

During the past 40 years the foreign trade of the United States, exports and imports, has ranged in value from 2.9 billion dollars in 1932 to 20.8 billion dollars in 1947. Because of wide differences in price levels between these years, the range in quantity of goods was less than that in value. Since 1923 the value of total exports has seldom exceeded 10 per cent of United States production. While this proportion appears small, it is highly significant from the standpoint of prices received. Moreover, the major exports are concentrated in relatively few lines; hence the proportion exported in these lines is considerably greater. Total imports have exceeded exports in value only in the year 1936; in most years they have varied from 60 to 90 per cent of exports, although during the recent war the value of imports fell to less than one-third that of exports.

Foreign trade is significant to us as consumers, as producers, as investors,

and as taxpayers.[1] As consumers our interest centers in food products, such as coffee, tea, cocoa, cane sugar, bananas, spices, and olive oil which enter into our everyday living. We also use silks, woolens, and cotton goods, and many other articles from abroad. As producers we depend upon foreign sources largely for many products—natural rubber, fertilizers, hides and skins, metals used as alloys in steel, wood pulp, clay, tin, asphalt, raw materials for drugs, and many others. An American automobile, for example, contains more than 300 different products imported from 56 countries; a telephone contains 18 imported materials.[2]

As taxpayers our interest was first in customs receipts, which in 1860 made up more than 94 per cent of total receipts of the Federal government. While customs receipts have increased in total value, they amounted to only 1 per cent of total revenues in the fiscal years 1946, 1947, and 1948. Since the war a new interest has arisen because of the contributions made by our government to restore trade in war-devastated countries, since these contributions are paid for by American taxpayers. As investors we have a stake in foreign countries, for our total investments abroad totaled nearly 29 billion dollars at the end of 1947. Of this huge total nearly 17 billion dollars was private investments and 12 billion dollars government investments. The United States is the leading creditor nation of the world and normally produces an excess of capital over our domestic needs. A part of this capital excess goes out as loans to other countries, the payments of interest and principal returning in the form of imported goods. Thus our interest in foreign trade is many-sided and should increase in importance in line with the leading position in world affairs now held by the United States.

The Basis of Foreign Trade

Fundamentally foreign trade is based upon economic considerations, but it has been used and is being used also as a means of achieving political, military, and social aims as well. From an economic standpoint foreign trade depends upon specialization. Countries differ in climate, soils, kinds and abundance of natural resources, stage of development, capital accumulation, and in the skill, energy, and efficiency of their people. Because of these differences some products like tropical fruits and natural rubber can be produced only in hot countries. Many products, both of agricultural and industrial kinds, can be produced in many countries, but some possess much greater advantage than others. Some countries which may not excel other countries in any products will produce certain kinds of products to

[1] Paul V. Horn, International Trade, Principles and Practices, 1935, p. 29.

[2] Maxwell S. Stewart, What Foreign Trade Means to You, pp. 2–4. Public Affairs Committee, Inc., Pamphlet 99, New York, 1946.

better advantage than other products and so tend to produce those things in which they have the least disadvantage. No single country possesses all the natural resources or can produce all the products it needs. Hence to secure needed products from other countries each country would gain by producing for exchange those products in which it has the greatest economic advantage or the least disadvantage.

This principle as applied to nations is the same as that which led to regional specialization of agricultural production in the United States or that shown in occupational specialization of individuals in a community. Obviously for trade to be effective between nations, the relative advantages must be enough to overcome the costs of moving the products from one country to another. This exchange of products is not a one-sided affair, but must be mutual. Thus an industrial nation may sell its products to an agricultural nation and receive food products in return; or the exchange may involve several nations, but it must be mutually beneficial to all of them. Exchanges of this sort would operate best under a general system of free trade and in a period of economic stability.

In practice trade between nations has ordinarily been subject to some degree of restrictions. These restrictions have in general become more binding as other considerations have supplemented to some extent those of an economic character. Based upon the extent of restrictions imposed by various countries, including the United States, our foreign trade may be classified roughly into three periods: that prior to 1914; 1914 to 1939; and 1939 to the present.

The Period Prior to 1914. The period before 1914 was one of expanding world markets based predominantly upon comparative advantage in production. We have noted earlier the extent to which the expanding agriculture of the United States relied upon foreign-market outlets to a greater and greater degree after 1870. Trade and prices in farm products were on a competitive basis.[3] Trade was carried on chiefly between private agencies. Governments exercised relatively few controls and these were within modest limits; further, governments gave little direct assistance to producers. A common monetary standard based on gold prevailed, and trade was largely of a multilateral character, *i.e.*, it involved several nations.

The Period 1914 to 1939. The period 1914 to 1939 was one of increasing control over foreign trade. Contributing to this situation were the effects of World War I and the world-wide depression in the 1930's. The outbreak of World War I affected foreign trade directly. War de-

[3] Robert B. Schwenger, World Agricultural Policies and the Expansion of Trade. *Journal of Farm Economics*, Vol. XXVII, No. 1, February, 1946, pp. 42–53.

mands determined the character and direction of shipments. Military necessity took precedence over relative costs. The war closed some markets, opened others. Emphasis was shifted from normal production to food and war supplies. Shipping space was at a premium because of unusual demands and extra hazards; hence short hauls were favored, changing the sources of supplies. To secure adequate supplies, prices were raised and uneconomic developments were stimulated. Rigid governmental measures controlled production and distribution. In the areas of conflict war destroyed the capital plant and caused loss of skilled manpower and liquidation of foreign investments. The end of the war made necessary the reconstruction of war-torn countries and the rebuilding of their productive equipment so that trade could be restored.

The depression of the early thirties set in motion a wave of economic nationalism. Some countries sought to become self-sufficient for military reasons; others tried to avoid the effects of the depression; some had foreign-exchange difficulties; while others took measures to protect various groups of their own producers. All these measures gave rise to many new forms of trade restrictions and the tightening of old ones greatly limited the flow of goods between nations.

The Period 1939 to 1950. The period since 1939 has witnessed even more rigid controls over international trade than in the period between the two wars. After 1939 war conditions again dominated foreign trade. Because of its wider extent and longer duration World War II brought much greater controls than World War I. During the recent war governments controlled nearly all foreign-exchange operations and the greater part of international trade. Governments and agencies sponsored by them engaged actively in trade. Since the end of the war the tendency has been to retain a large part of these restrictions. Many motives have contributed to this situation as various nations have tried to aid their own domestic interests. Among these have been the maintenance of trade bargaining power, the balancing of international payments, control of foreign exchange, the stabilization of the national economy, conservation of resources, and military preparedness.[4]

As a result foreign trade has become largely subservient to these various national objectives, and government intervention is more complete and far-reaching than before the war. Yet so great have been the needs for rehabilitating the war-torn countries that a large volume of trade has taken place—much larger in exports from the United States than in shipments to us. A large segment of this trade has been financed by gifts and loans of the United States. To a considerable degree, therefore, it has represented abnormal rather than normal lines of exchange.

[4] Horn, *op. cit.*, 1945, p. 109.

Kinds of Restrictions to Foreign Trade

Since all nations are to some extent dependent upon imports and exports, restrictions upon international trade have far-reaching effects. As indicated above such restrictions have increased greatly since 1914. These restrictions are of many kinds; some are designed primarily to control trade, while others are intended to serve other national interests but incidentally affect trade between nations. Among these are tariffs, import quotas, bilateral trade agreements, export subsidies, commodity agreements, currency devaluation, control of exchange, and domestic price policies.

A tariff as ordinarily used is a tax upon imports coming into a country. It is levied at a flat rate per unit (specific duties) or on a basis of percentage of value (ad valorem) or a combination of the two. Tariffs ordinarily do not discriminate among nations although they may be combined with other restrictions to do so. Import duties have three effects: they tend to exclude imports; they produce revenue on dutiable goods entering the country; and they tend to raise domestic prices of products not on a surplus basis. While tariffs have been in use for a long time, after World War I many nations increased the rates and applied tariffs to many more articles than before.

Another kind of restriction is import quotas, which differ from tariffs in that they limit the amounts of specific products that may be imported in order to protect domestic producers or conserve foreign-exchange. Their effects are to limit imports, to raise domestic prices of the protected items, and therefore to encourage expansion of such production within the country.

Under import quotas nations often allocate the supplies of certain imports to specific producing countries and in addition give them the advantage of lower tariff rates or even of free trade. This practice is sometimes called "preferential treatment." An example is found in the trade preferences among nations in the British Commonwealth. The effect obviously is to channel trade in certain directions to the partial or total exclusion of other nations.

Another related type of restriction is found in bilateral trade agreements under which two nations contract to carry on trade in products which are to their mutual advantage and on terms not granted to other nations. Products may be exchanged on a barter basis. The restrictive effect is the same as that of preferential treatment.

Export subsidies are employed to increase a nation's exports when its imports are limited or its domestic prices are maintained at a higher level than the world prices. They apply to specific products, thus benefit a

particular group of producers within the country, and they may increase employment for the time. Thus they create a greater flow of exports than would otherwise take place.

The International Wheat Pact, which runs from Aug. 1, 1949, through July 31, 1953, represents a multilateral type of commodity agreement or export quotas in which four exporting nations agree to share the wheat exports going to 36 importing nations.[5] Its objective is "to assure supplies of wheat to importing countries and markets for wheat to exporting countries at equitable and stable prices." For the first year the price range is fixed at $1.50 to $1.80 a bushel for the highest grade at Fort William–Port Arthur, Canada. The minimum price declines 10 cents each year, giving a range of $1.20 to $1.80 for 1952 to 1953. The pact sets the amount each importing nation agrees to buy and allocates the 456 million bushels of wheat to be sold each year as follows: Canada, 204 million bushels; United States, 169 million; Australia, 80 million; and France, 3 million.

Devaluation of a nation's currency cheapens its money in terms of the currencies of other nations. It enables that nation to export its products at lower prices, thus stimulating exports while maintaining its domestic price level. Devaluation also raises the price of imports and so tends to limit them. The departure of many nations from the gold standard during the thirties destroyed the stability which had prevailed in their currency-exchange ratios. In September, 1949, the British pound was again devalued from $4.03 to $2.80. Within a short period the currencies of some 25 other nations were also devalued, most of them by the same extent of 30 per cent, others by a lesser amount. The general effect was to stimulate export trade and to raise the costs of imports relative to those of countries like the United States which did not devalue at that time.

The most drastic restrictions are imposed when governments assume control of exchange or themselves carry on international trade. In the former case they limit the use of exchange to purchases approved by the government. In recent years and especially since World War II many nations have been acutely short of both goods for export and funds to buy needed imports. By direct limitation of exchange they have sought to protect their limited reserves. Since the war the United States has been a chief source of needed materials, hence the "dollar shortage" of other nations. State trading is another way of securing the same result. In a totalitarian country like Russia all international trading is conducted by the government, but other countries also have made use of this device.

Domestic price-supporting measures, while of less importance than many direct restrictions, may affect foreign trade. When such supports

[5] Robert E. Post, International Wheat Pact. *Agricultural Situation*, Vol. 33, No. 5, May, 1949, p. 5.

raise domestic prices above the world level, they tend to price that country out of the world markets unless recourse is had to some countervailing device such as export subsidies.

Restrictions of these kinds and many others related to them are frequently used in various combinations. Further, restrictions imposed by one country often call forth retaliatory measures by others. Thus international trade is handicapped by the effects not only of measures designed for its control, but also of those whose influence is incidental but nevertheless restrictive. Under such strait-jacket conditions it is obvious that world trade is on a very different basis than that of comparative advantage which prevailed before World War I.

The Balance of International Payments

The effects of these many kinds of restrictions become more apparent when we consider how payments for trade are balanced among nations. International transactions are of two kinds: the visible, or movements of commodities as exports and imports, which are easily recognized; and the invisible, or investments, services, and movements of capital, which are not so well known. In their foreign trade transactions nations must roughly balance the values of export and import transactions just as individuals balance receipts and expenditures. With nations the trade and balances may involve more than two nations, but for each nation its total transactions going out and those coming in must balance roughly. This balancing is referred to as the balance of international payments. It consists of three items: (1) current items which are made up of two parts, trade and services; (2) gold and currency movements; and (3) capital items.

Current Items. *Goods.* Trade or the physical movement of commodities from one country to another is easily visualized. The tables of exports and imports of farm products on the following pages provide illustrations of this "visible" foreign trade. Total merchandise exports and imports—both agricultural and nonagricultural—as given in Tables 51 and 54 represent the values of this trade or merchandise movement since 1914. If total exports for this period are compared with total imports, the exports exceeded the imports by 82,454 million dollars or an average of 2,356 million dollars per year. In only one year, 1936, did imports exceed exports. This excess of exports is often spoken of as a "favorable" balance of trade. This use is misleading; it is the balance of merchandise trade or visible trade which is favorable or unfavorable.

Services. Services make up the so-called "invisible" items of trade. For example, citizens of this country or immigrants working here may send money to relatives in other countries; and citizens of this country make large expenditures while traveling abroad. Other invisible items are pay-

ments for ocean and railroad freight, premiums on marine insurance, interest and dividend payments, commissions of bankers and brokers; royalties, patents, and copyrights; and contributions by educational, charitable, and religious organizations.[6]

When transactions of these kinds result in a flow of cash into this country, the effect is the same as an export of goods; if they result in a flow of cash out of the country, they act in the same way as an import of goods. In any year there are numerous items of these kinds on both sides of the ledger, and their net effect determines the balance for services or invisible items. Exact records are not available for all these items; hence they can be estimated only roughly. The balance for services plus that for trade or merchandise makes up the total current items.

Gold and Currency Movements. Transactions between nations as between individuals may be handled on a money basis. Gold is the universally accepted basis of exchange, because values of currencies vary and are subject to wide fluctuations in rates of exchange. It is necessary to exchange gold or other mediums only to settle net balances as in a clearing house for banks. In attempting to help balance the surplus of American exports many other nations shipped gold to us until their stocks of gold were running low. The flow of gold or currency into this country acts as an import and the flow out of the country as an export. The monetary stock of gold in the United States increased from 1.9 billion dollars in 1914 to more than 24 billion dollars at the beginning of 1949. A part of this marked increase resulted from the revaluation of gold on Jan. 31, 1934; by this process the amount of gold in a dollar was reduced; hence the gold stocks on hand represented a greater value in terms of the cheaper dollars.

Capital Movements. The balance of payments is affected also by movements of capital—short-time, long-time, and donations. Short-time capital movements consist largely of foreign deposits in American banks and American deposits in foreign banks as working capital for commercial needs. Long-time capital movements include loans based upon long-term security issues and other international capital transactions such as the use of American capital to buy or construct plants in other countries.

Governmental donations of funds or purchasing power to other nations, where repayment is not required, also come under capital items. Since the recent war much rehabilitation aid has been extended to other nations by the United States, as illustrated by funds for the Economic Cooperation Administration. A part of these funds is spent here for goods. Thus capital transferred from this country to other nations acts as an import, and that transferred here by others, as an export.

The balance of international payments comes in the net result of all

[6] Horn, *op. cit.*, p. 382.

these items: movements of goods, invisible items or services, gold and currency movements, and capital items (Table 51). The United States exports of goods and services in 1948 was valued at the huge total of 16.8 billion dollars. This was offset by similar kinds of imports of 10.5 billion dollars, leaving an export surplus of 6.3 billion dollars to be balanced. The

TABLE 51. MEANS OF FINANCING AND BALANCE OF FOREIGN TRADE OF THE UNITED STATES, 1948*
(In Billions of Dollars)

Item	Receipts from foreigners for exports (credits)	Payments to foreigners for imports (debits)	Net credits (+) or debits (−)
Current items:			
Merchandise (exports and imports)	$13.4	$7.7	
Services	3.4	2.8	
Total	$16.8	$10.5	$+6.3
Capital and gold movements:			
United States, government (net):			
Credits	.....	$0.9	
Donations	.....	3.8	
Total	.....	$4.7	$−4.7
United States, private (net):			
Foreign investment (long and short term)	.....	$0.9	
Donations	.....	0.6	
Total	.....	$1.5	−1.5
International institutions (net):			
International Bank	.....	$0.2	
International Monetary Fund	.....	0.2	
Total	.....	$0.4	−0.4
Foreign countries own capital assets (net):			
Sales of gold to United States	.....	$1.5	
Reduction of banking funds in United States	.....	−1.0	
Liquidation of other assets in United States	.....	0.3	
Total	.....	$0.8	−0.8
Total sources of gold and capital	.....	$7.4	$−7.4
Errors and omissions	.....	.....	−1.1

* *Federal Reserve Bulletin*, Vol. 35, No. 5, May, 1949, p. 481.

largest element in this balance was donations, governmental and private; the next was credits from our government, private sources in this country and international institutions; and finally by some net reduction in assets of foreign countries.

Under normal conditions donations would not be available to balance

accounts. Foreign countries have only limited liquid assets. Larger exports from this country could be financed only by larger imports of goods and services or by more loans or investments or a combination of these. Interest and principal repayment can usually be made only by goods or services of other nations. It follows, then, that as a nation we cannot export unless we also import, unless we are willing to donate the means of payment.

Influences Affecting the Foreign Trade of the United States

Upward Trend of Tariff Rates. The United States has used tariffs since the establishment of the Federal constitution in 1789. Tariffs were first levied to produce revenue, and they were the main source of Federal revenue until 1860. The idea of protection appeared about 1816. Until 1860 rates were quite low, but were raised greatly to meet the expenses of the Civil War. From 1860 to 1930 nearly a dozen tariff acts were passed. With few exceptions they followed an upward trend providing more and more protection. This increased protection developed in two ways: an increasing number of articles on the protected lists and higher rates of protection. The climax came in the Smoot-Hawley Tariff of 1930.

In the early days of the country a case could be made for protection. The "infant" industries demanded protection from foreign competition. To promote industrial growth and the development of canals, railroads, and other improvements much capital was borrowed from abroad. Tariff rates were not high enough to interfere with the inflow of imports, which exceeded exports from 1779 to 1837 and again from 1850 to 1873. Trade was balanced during these periods first by profits from our merchant marine and later by the inflow of capital from abroad.

From 1873 to 1914 exports exceeded imports as a result of our agricultural and industrial expansion. The tariff structure had its ups and downs, but the idea of protection was strongly entrenched. Until 1914 we were a debtor nation, and the excess of exports was balanced by interest payments on foreign loans, by expenditures of tourists abroad, and by remittances from immigrants here.

Change from Debtor to Creditor Position. During World War I the United States changed from a debtor to a creditor nation as a result of vast foreign loans. The United States entered that war period as a net debtor of 2.7 billion dollars. At the end of 1919 its position as a net creditor was 14.1 billion dollars owed from abroad. By 1928, although loans by our government had ceased and the value of those outstanding had shrunken seriously, private American interests had made additional loans sufficient to raise the net creditor position to more than 16 billion dollars.

This change from a debtor to a creditor position would normally require several decades and would thus allow for gradual adjustment in trade policies. The rapidity of the change and the severity of postwar adjust-

ments found us wholly unprepared for the new role. As a creditor nation the net flow of goods and gold should have been into this country. We accepted the gold sent in payment. In goods, however, our exports exceeded our imports, and in 1930 we further restricted imports by the highest tariff enacted by this country. We were in fact balancing our excess of exports largely by extending public and private credit. To the extent that part of this credit later proved to be worthless we had supported trade by donations.

Following 1929 the shrinkage in American loans abroad and the Tariff Act of 1930 brought about a marked decline in volume and value of both imports and exports. The high rates of this Tariff Act are indicated by the proportion which duties represented of the values of dutiable merchandise imported. In 1931 for all dutiable imports this proportion was 53 per cent; groups of items in the various classifications of the tariff schedules ranged from 18.7 per cent for wool and its manufactures to 133.2 per cent for sugar. Of the other 13 groups, 4 ranged from 26 to 30 per cent; 4 from 38 to 48 per cent; and 5 from 52 to 76 per cent.[7] The high rates of this Act provoked retaliatory action of higher tariff rates on the part of many other countries.

Reciprocal Trade Agreements. In 1934 Congress passed an amendment to the Tariff Act of 1930, which is popularly known as the Reciprocal Trade Agreements Act. In order to open channels of international trade as a means of contributing to economic recovery in the United States, the President was authorized to work out trade agreements with individual countries by which each would make various trade concessions chiefly in reductions of import duties, but also to remove quotas or exchange restrictions. These agreements are bilateral, *i.e.*, they involve two nations. The restrictions usually associated with bilateral agreements are largely eliminated by the traditional trade policy of the "most-favored-nation" clause which is embodied in the Trade Agreements Act. Under it a concession on a given product in a trade agreement with a foreign nation (other than Cuba) applies also to the same product from any third nation unless that third nation discriminates against the products of the United States. This policy broadens the scope of the agreements and promotes international good will and peaceful commercial relations.

By 1940 agreements were in force with 20 countries with which about 60 per cent of United States trade was carried on. Up to the middle of 1944 agreements had been concluded with 6 additional countries. In August, 1949, negotiations with 13 countries were in process.[8] As a result of agreements concluded the ratio of duties to value of dutiable imports

[7] Statistical Abstract of the United States, 1947, pp. 924–926.

[8] Letter, Bureau of Agricultural Economics, U.S. Department of Agriculture, Aug. 5, 1949.

declined from more than 50 per cent to 39.3 per cent in 1936; 35.6 per cent in 1940; 32.8 per cent in 1943; 28.2 per cent in 1945; and 13.7 per cent in 1948.[9] The high price level in 1948 was in part responsible for this low percentage for items on a specific duty basis. This act represented a reversal not only of tariff rates, but still more important, in the methods of rate making. Previous tariffs, written by Congress subject to log-rolling tactics and pressures of special-interest groups, usually resulted in strange compromises without a sound economic basis. The Act of 1934 is not basically a new act, but rather adjustments within prescribed limits of the Act of 1930, carefully worked out in line with the mutual interests of the countries involved. It represents, moreover, a tardy recognition of our changed role of a creditor nation.

Because of the "most-favored nation" clause lower rates established under the trade agreements usually become the current rates (Table 52). In some cases the lower rates apply only within specified quota limits. Tariff rates still apply to nearly all farm products produced within this country, though at lower rates than formerly.

The United States has employed export subsidies at times as a means of disposing of surplus stocks of government holdings. Under the domestic price-support programs for farm products government subsidies have often held prices of many products above the world level, and so discouraged trade.

World War II, as pointed out earlier, greatly changed the picture of our foreign trade. The vast amount of financial help extended to foreign nations under lend-lease and UNRRA was largely on a donation basis rather than as loans, as was true in World War I. Postwar assistance has been largely of the same type. The balance-of-payments deficit (excess of exports and services) for the three fiscal years beginning July 1, 1945, was 25.5 billion dollars. Of this U.S. government loans and grants provided 16.6 billion dollars; private U.S. loans and grants, about 3.5 billion dollars; and liquidation of foreign assets, about 5 billion.[10] Subsequently the operations of the Economic Cooperation Administration (ECA) and of the Military Assistance Program (MAP) are contributing more billions to foreign countries. These loans and grants should serve also to reconstruct industrial and agricultural production in the countries aided, leading to more normal lines of international trade.

[9] Statistical Abstract of the United States, 1947, p. 927. Figures for 1945 and 1948 from L. J. Norton, Foreign Trade and Illinois Agriculture. *Illinois Farm Economics*, Nos. 168–169, May-June, 1949, p. 841.

[10] D. A. Fitzgerald, Coming Readjustments in Agriculture—The International Phase. *Journal of Farm Economics*, Vol. XXXI, No. 1, Part I, February, 1949, p. 27.

TABLE 52. UNITED STATES TARIFF RATES ON SELECTED AGRICULTURAL PRODUCTS, 1946[a]

Item	Rate under 1930 Tariff Act	Rate under trade agreement
Bananas	Free[b]	
Broomcorn per ton	$20	$10[b,c]
Butter, cents per lb	14[b]	
Chocolate, unsweetened, cents per lb	3	1.5[b,d]
Coffee	Free[b]	
Hides, cattle, % of value	10	5[b,e]
Oranges, cents per lb	1[b]	
Potatoes for consumption, cents per 100 lb.:		
December–February	75	37.5[b,f]
March–November	60	30[b,f]
Swine, not for breeding, cents per lb	2	1[b,f]
Wheat, cents per bu	42[b]	
Grease wool, cents per lb	24	13[b,e]

[a] Source: C. F. Wells, United States Tariff Rates on Agricultural Products. U.S. Department of Agriculture, August, 1946.

[b] Current rate.

[c] Argentina Trade Agreement.

[d] Netherlands Trade Agreement.

[e] Argentina and Uruguay Trade Agreements.

[f] Canada Trade Agreement.

United States Foreign Trade in Farm Products

Export Trade in Farm Products before 1914. Upon this background the earlier development of United States export trade in farm products may be briefly sketched. As noted under the development of our agriculture, exports of tobacco, rice, and indigo were important in the early years of our national history. Cotton became a leading export soon after the invention of the cotton gin. The most rapid growth of exports came after 1870 when the opening up of the central prairies and plains, the development of farm machinery, and the construction of railways combined to provide products far in excess of our domestic needs. The repeal of the English corn laws in 1846 and the rapid industrialization of that country provided good markets. From 1870 until 1900 we shipped out larger and larger quantities of cotton, wheat and flour, tobacco, corn, pork, and beef. Agricultural exports amounted to roughly 300 million dollars in 1870, 600 million dollars in 1880, and 900 million dollars in 1900. Meanwhile industrial developments were taking place, and although agricultural exports were expanding they comprised a smaller proportion of our total exports. From 1870 to 1880 they made up nearly 80 per cent of the total: by 1890, 75 per cent; and by 1900, 65 per cent. As the country

developed industrially, imports, which in the earlier years had been largely manufactured goods, shifted more to raw materials—rubber, wool, raw silk, hides and skins, and vegetable fibers.

From 1900 to 1914 the quantity of farm products exported, except tobacco and cotton, declined, although their total value averaged about 1 billion dollars annually. This decline resulted from the raising of barriers in importing countries, the opening up of new agricultural countries—Canada, Argentina, Australia, and Russia—and from our growing domestic market. By 1910 farm exports were less than half of total exports.

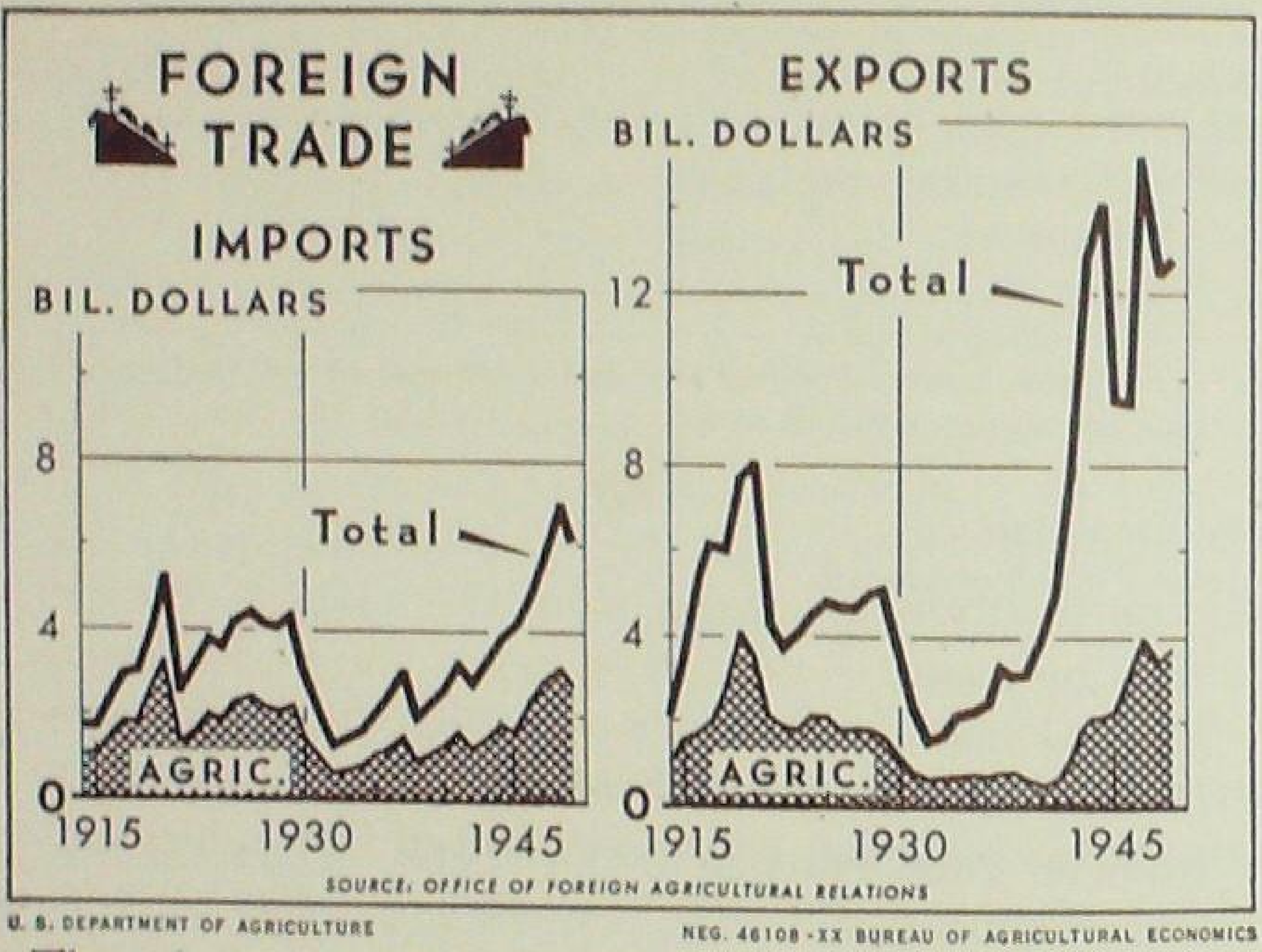

FIG. 23. The values of total exports and total imports have increased sharply in recent years. United States expenditures for foreign aid have stimulated exports; lower tariffs have aided imports. Higher prices are reflected also in these values. During the postwar years agricultural products have gained relative to the total.

Trends in Total and Agricultural Trade since 1914. *Value of Total and Agricultural Exports.* The erratic character of total United States exports since 1914 is shown in Fig. 23 and Table 53. The values, of course, reflect changes both in quantities and prices. The sharp rise during World War I was followed by precipitate drops in the depression periods following 1920 and 1929, then again a sharp and sustained rise during World War II. From the peak of 1944, export values dropped a third in 1945 and 1946, but more than recovered the loss in 1947. Nonagricultural exports include a vast range of items—some finished goods and others in various stages from raw materials to finished products. The major commodity groups in the order of value of products in the prewar period were machinery and

vehicles, other metals and manufactures, nonmetallic minerals, chemicals and related products, wood and paper, and textiles (except unmanufactured cotton).

TABLE 53. AVERAGE ANNUAL TOTAL AND AGRICULTURAL EXPORTS, UNITED STATES, BY PERIODS*

Period	All commodities (millions)	Agricultural products (millions)	Per cent agricultural of all commodities
1914–1915	$2,782	$1,302	46.8
1916–1920	6,694	2,805	41.9
1921–1925	4,310	2,013	46.7
1926–1930	4,688	1,692	36.1
1931–1935	1,989	731	36.7
1936–1940	3,166	701	22.1
1941–1945	9,924	1,655	16.7
1946–1948†	12,385	3,491	28.2
1949†	11,885	3,576	30.0

* *Foreign Agricultural Trade* (Office of Foreign Agricultural Relations), May, 1949, p. 24.

† Preliminary. Exports under Army Civilian Supply Program included in 1947, 1948, and 1949.

Agricultural exports rose in value from 1914 to 1919, then fell abruptly to 1921, and continued the downward trend almost without interruption to 1940, from which exports increased to 1947. On a volume basis the World War I peak was about a fourth above the 1924 to 1929 average. By the mid-thirties the volume was down to half that average, and by 1940 to only about one-fourth. By 1946 the volume of farm exports had again reached the 1924 to 1929 average and in 1947 was 6 per cent above it. From 1919 until 1940 and 1941 the proportion of total exports represented by agricultural products shrank from more than one-half to about one-eighth.[11]

Major Items of Agricultural Exports. While many kinds of farm products go into export channels, the major export items consist of a limited number.[12] Historically the major exports have been cotton, wheat,

[11] The percentage was 53 in 1919; 48 in 1921; 50 in 1922; and 13 in 1940 and 1941.

[12] Export statistics of quantities include amounts shipped out under lend-lease, UNRRA, United States Foreign Aid, Economic Cooperation Administration, and the like, as well as commercial shipments. Beginning Jan. 1, 1947, they also include exports under the Army Civilian Supply Program. They do not include shipments to the U.S. armed forces abroad for their own use or food exported for relief or charity by individuals or private agencies.

tobacco, pork, and lard. After the outbreak of World War II, fruits, vegetables, dairy products, eggs, and canned meats were also exported in large quantities. For many of these products the changes in value have been abrupt, often from year to year (Fig. 24). How each of these products fared both in relation to each other and in response to changing conditions may be shown by average export values for a series of 3-year periods (Table 54). The peak of the World War I period was attained in 1918 to 1920; the low point of the depression, in 1932 to 1934; the prewar

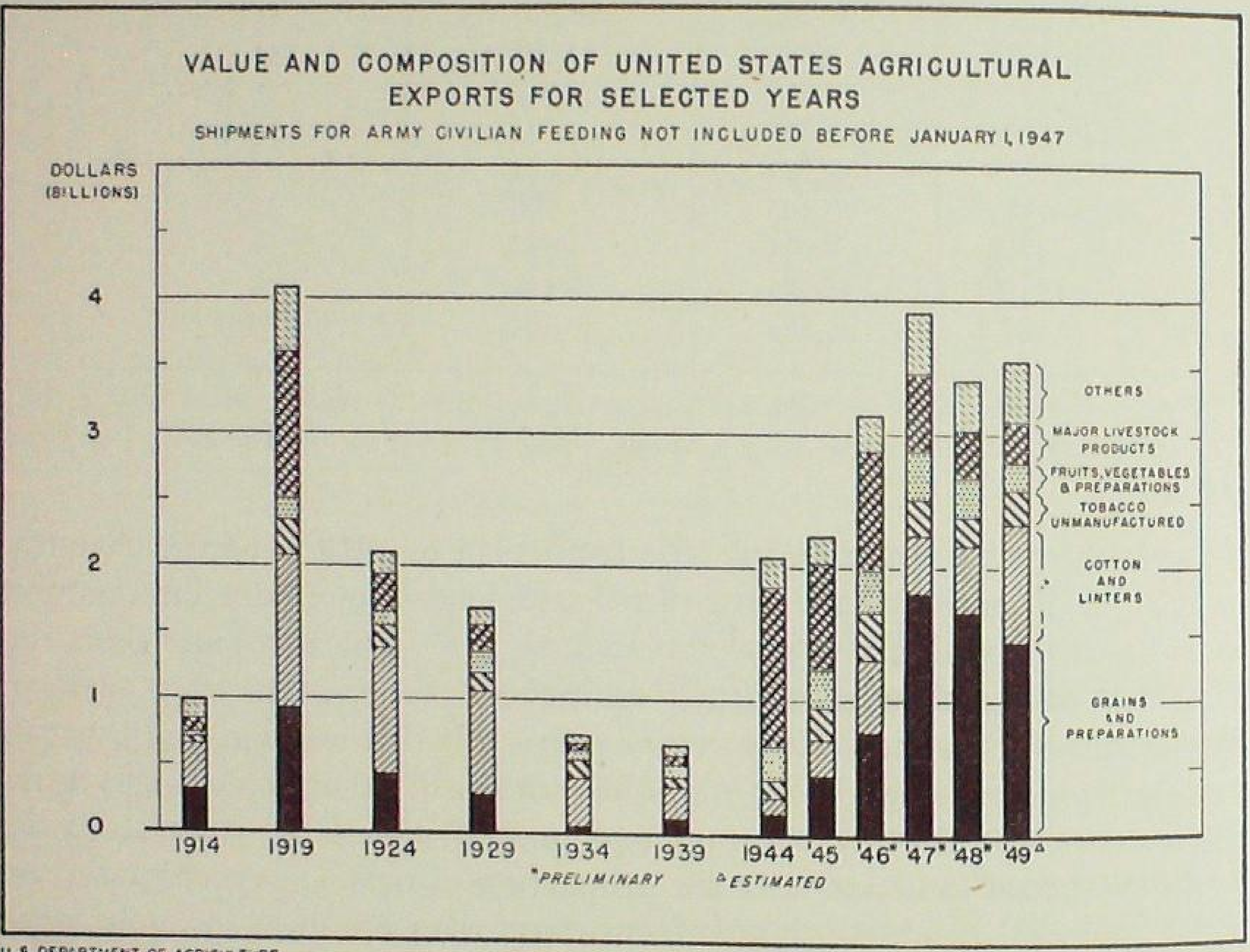

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FIG. 24. The composition of agricultural exports has changed greatly. During the war years livestock products were dominant; in the postwar years grains have been foremost, with cotton increasing rapidly.

situation, in 1938 to 1940; the war years are represented by 1943 to 1945; and the postwar conditions, by 1946 to 1948 and by 1949.

On a value basis all products except fruits dropped sharply from the peak in 1919 to the depth of the depression. Tobacco and cotton were relatively less affected. From then until the prewar period further shrinkage was more evident than recovery. The recent war period brought gains in all lines except cotton; the larger gains being in egg products, canned meats, dairy products, pork, lard, and vegetables. For a short time after the war, wheat, other grains, cotton, and tobacco made very sharp

increases; with some further increase in dairy products, fruits, and vegetables; and sharp declines in lard, egg products, canned meats, and pork.

TABLE 54. AVERAGE ANNUAL VALUE OF LEADING UNITED STATES AGRICULTURAL EXPORTS FOR SPECIFIED YEARS*
(Calendar-year Basis) (In Millions)

Exports	1918–1920	1932–1934	1938–1940	1943–1945	1946–1948†	1949†
Cotton and linters	795	372	228	193	492	874
Wheat and flour	513	32	65	153	1,099	1,001
Other grains	280	14	68	83	365	460
Tobacco, unmanufactured	143	91	92	185	279	252
Pork	418	16	16	237	35	19
Lard	156	31	17	117	85	89
Canned meats (except pork)	41	1	1	202	76	6
Dairy products	106	5	10	228	258	174
Egg products	12	‡	1	254	100	26
Vegetables and preparations	38	8	16	112	162	87
Fruits and preparations	62	72	72	122	158	102

* *Foreign Agricultural Trade* (Office of Foreign Agricultural Relations), April, 1950.
† Preliminary. Exports under Army Civilian Supply Program included in 1947, 1948, and 1949.
‡ Not listed separately.

While value figures indicate roughly the returns to producers, quantity figures show the volume of products moved. On a volume basis from World War I to the depression period cotton and fresh and dried fruits held their own or gained; lard shrank 10 per cent and tobacco 30 per cent; and pork and wheat exports were reduced to one-twelfth of their war level (Table 55). By the period 1938 to 1940 most products had suffered further declines in volume, tobacco holding up best of the major products. The war period brought further declines to cotton and wheat, and drastic increases in pork, lard, canned meats, evaporated milk, cheese, egg products, and dried beans. Smaller increases occurred for tobacco, rice, and dried fruits. The war changes reflected demands of lend-lease and UNRRA. In the immediate postwar period, wheat, rice, evaporated milk, citrus fruits, and tobacco have been shipped in record quantities; other fresh fruits, dried fruits, and vegetables also held up well. Through 1948 declines occurred in quantities of the higher priced concentrated products such as meats, cheese, and eggs. Total export values of farm products changed but little in 1949, but values of most groups changed sharply. Because of the recovery in the ability of war-devastated countries to produce more of their own food supplies and the effects of outside assistance

in the early postwar years, the longer time trend of agricultural exports by the United States is by no means clear.

TABLE 55. AVERAGE QUANTITIES OF LEADING UNITED STATES AGRICULTURAL EXPORTS FOR SPECIFIED YEARS*
(In Millions)

Exports	1918–1920	1932–1934	1938–1940	1943–1945	1946–1948†	1949†
Cotton and linters, bales	6	8	5	2	3	6
Wheat and flour, bu	214	48	84	93	429	408
Tobacco, lb	515	360	306	358	453	493
Pork (except lard), lb	1,470	117	81	791	116	53
Lard, lb	583	524	228	711	361	614
Other canned meats, lb	44	2	3	320	258	22
Milk, evaporated, lb	‡	36	57	548	570	250
Cheese, lb	27	1	2	216	153	98
Egg products, lb	43	‡	‡	207	74	28
Rice, lb	291	127	306	491	834	1,088
Apples, fresh, lb	147	570	322	34	142	85
Pears, fresh, lb	.....	108	100	21	64	21
Oranges, fresh, lb	114	263	490	495	624	395
Raisins and currants, lb	75	99	114	175	161	158
Prunes, dried, lb	68	191	151	102	197	125
Beans, dried, lb	.....	7	45	245	187	163

* 1918–1920 fiscal years, Agricultural Statistics, 1942, pp. 543–546. Other years, calendar basis, *Foreign Agricultural Trade* (Office of Foreign Agricultural Relations), April, 1950.

† Preliminary. Exports for Army Civilian Supply Program included in 1947, 1948, and 1949.

‡ Not listed separately.

Value of Total and Agricultural Imports. Total imports into the United States since 1914 like exports have been subject to the disturbing influences of wars and depressions (Table 56). Imports, on a value basis, however, have followed somewhat different trends in that the sharp increases in connection with both wars took place mostly after hostilities ceased, and the recovery from 1922 to 1929, following the decline after 1920, was much greater and longer sustained (Fig. 23). During the early part of this general period agricultural imports made up about 60 per cent of the total. This proportion declined to 50 per cent in the thirties, and during the war to 46 per cent, but has increased somewhat in the postwar years. Nonagricultural imports, prewar, by commodity groups, were highest for wood and paper products, followed in turn by metals and manufactures, textiles (excluding raw wool, cotton, and silk), nonmetallic minerals, chemicals, and machinery and vehicles.

Agricultural imports, on a value basis, followed the general trend of

total imports, but increased to a smaller extent following the low points in 1921 and 1923. From 1924 to 1942 the value of agricultural imports was greater than that of agricultural exports.

TABLE 56. AVERAGE ANNUAL TOTAL AND AGRICULTURAL IMPORTS, UNITED STATES, BY PERIODS*

Calendar years	All commodities (millions)	Agricultural (millions)			Per cent competitive of total agricultural
		Total	Noncompetitive	Competitive	
1914–1915	$1,784	$1,036	$419	$617	59.6
1916–1920	3,511	2,178	826	1,352	62.1
1921–1925	3,450	1,841	911	930	50.5
1926–1930	4,033	2,085	1,157	928	44.5
1931–1935	1,708	860	438	422	49.1
1936–1940	2,440	1,236	614	622	50.3
1941–1945	3,469	1,596	610	986	61.8
1946–1948†	5,833	2,742	1,336	1,406	51.3
1949†	6,598	2,897	1,454	1,443	49.9

* *Foreign Agricultural Trade* (Office of Foreign Agricultural Relations), April, 1950.
† Preliminary.

TABLE 57. AVERAGE ANNUAL QUANTITIES OF LEADING NONCOMPETITIVE AGRICULTURAL IMPORTS FOR SPECIFIED PERIODS*
(In Millions)

Product	1918–1920	1932–1934	1938–1940	1943–1945	1946–1948†	1949†
Coffee, lb.	1,201	1,562	1,914	2,288	2,671	2,919
Rubber, crude, lb.	475	1,020	1,209	212	1,364	1,486
Cocoa, cacao beans, lb.	377	459	549	582	584	629
Wool, carpet, lb.	67	90	116	55	262	173
Silk, lb.	51	74	50	‡	7	3
Bananas, bunch	36	47	58	29	58	55
Tea, lb.	119	91	92	77	84	95

* Agricultural Statistics, 1942, 1946, 1947. Fiscal years except 1946–1948.
† *Foreign Agricultural Trade*. Office of Foreign Agricultural Relations, U.S. Department of Agriculture, August, 1948, and April, 1950. Calendar year basis. Preliminary.
‡ Less than one-half unit.

Noncompetitive Agricultural Imports. Agricultural imports are classified into two groups: noncompetitive or complementary and competitive or supplementary. Noncompetitive products are those not produced commercially in the United States and not interchangeable in use with domestic products. More than 90 per cent of these products consist of

rubber, coffee, raw silk, cacao beans, wool for carpets, bananas, tea, and spices. Most products of this class are admitted duty free. Demand for such products remains high, and the quantities imported in good times or bad have generally followed an upward trend except when war conditions reduced or cut off supplies (Table 57). During the war synthetic products were developed to supply shortages of crude rubber and silk. Rubber imports in the postwar years 1946 to 1948 regained their prewar position, but silk imports were still much below the earlier figure. The relative postwar positions of noncompeting imports are given in Table 58.

TABLE 58. AVERAGE ANNUAL VALUE OF NONCOMPETITIVE AGRICULTURAL IMPORTS, 1946–1948 AND 1949, CALENDAR YEARS*
(In Millions of Dollars)

Product	1946–1948 av. value	1949
Animal products:		
Wool, carpet	$66	$57
Silk, raw, unmanufactured	53	7
Total animal products	$119	$64
Vegetable products:		
Coffee	$589	$794
Rubber, crude	286	240
Cacao beans, cocoa, chocolate	137	129
Vegetable fibers	54	63
Bananas	48	53
Tea	36	46
Spices	27	34
Drugs, herbs	22	18
Essential and distilled oils	14	11
Other	4	1
Total vegetable products	$1,217	$1,389
Total noncompetitive products	$1,336	$1,453

* *Foreign Agricultural Trade* (Office of Foreign Agricultural Relations), August, 1948, and April, 1950. Preliminary.

Competitive Agricultural Imports. Competitive or supplementary imports are those similar to or interchangeable in use with products produced commercially in the United States. These products have varied from about 45 per cent to more than 60 per cent of the value of all agricultural imports (Fig. 25). It is in connection with these competing products that all the controversy has arisen over protection for farm products. Some have thought that the United States should admit no farm products which are or can be produced here. The slogan "The American market for the

American farmer" expresses this position. The counterpart of this position is found in some industrial lines in which efforts are made to protect domestic production by high tariffs against competition from abroad.

Several bases exist for competitive agricultural imports. For some products domestic production is inadequate to supply our needs and could not economically be expanded to that extent. Sugar, clothing wool, and hides and skins are in this category. For other products we do not produce certain qualities or types needed for particular uses. Tobacco, cotton, and wheat are imported for such uses or for blending purposes. Imports increase at certain times in response to short supplies and high prices in this country as illustrated by high corn imports in 1937 following the drought in 1936. Many products enter because prices after allowing for transportation and tariffs are higher than can be secured elsewhere.

VALUE OF U.S. FOREIGN TRADE IN AGRICULTURAL PRODUCTS, 1914-48

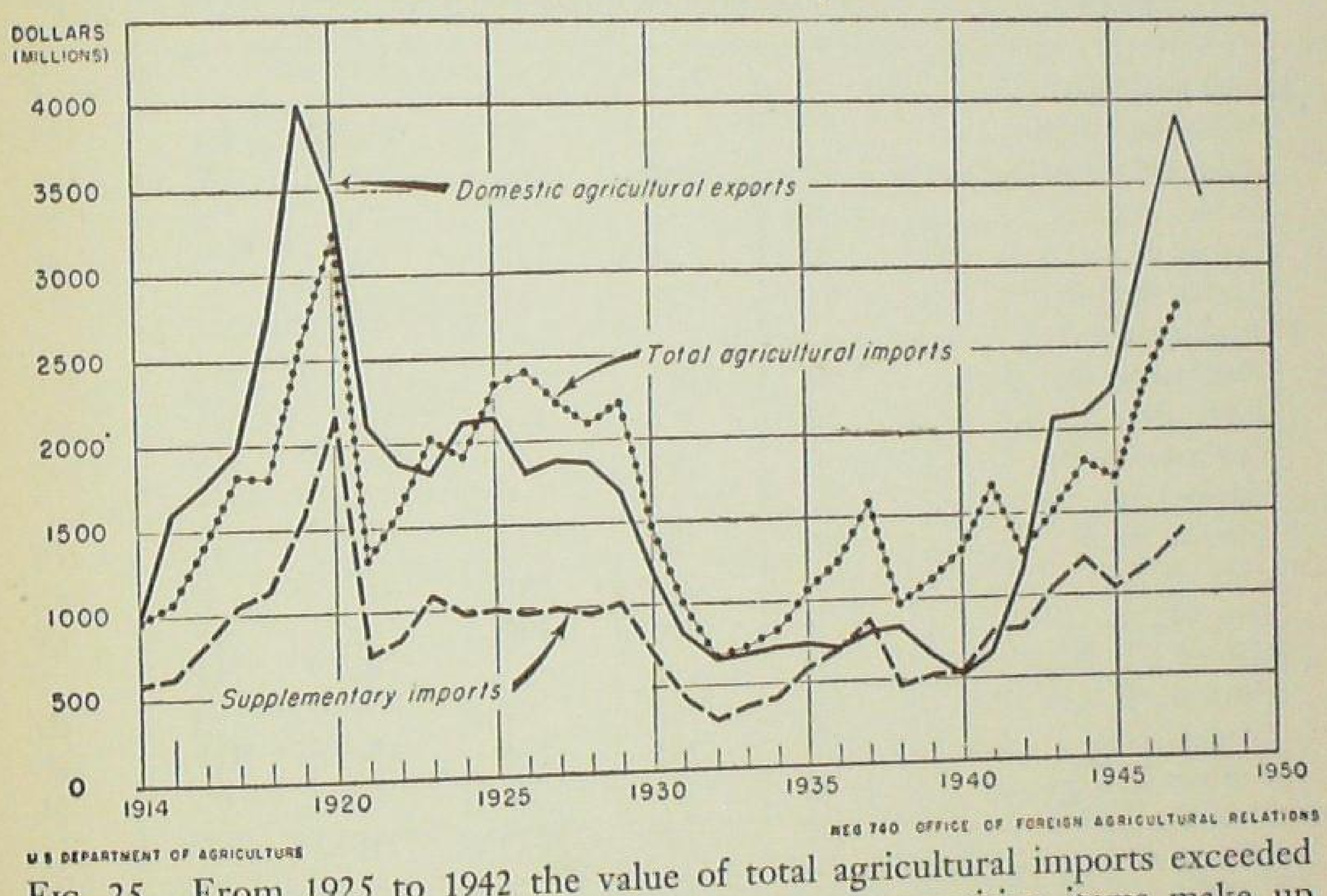

FIG. 25. From 1925 to 1942 the value of total agricultural imports exceeded that of agricultural exports. Supplementary or competitive items make up about one-half of all agricultural imports.

The number of competitive farm-import items is very large, and they are normally subject to duties. The Tariff Act of 1930 lists 416 items in Schedule 7 alone ("Agricultural Products and Provisions"). Others are included under other schedules and under the so-called "basket clauses" of which Schedule 7 has 47. The quantities of major imports of this group for selected 3-year periods show much less variation than agricultural

exports for the same years (Table 59). Some vegetable oils and oilseeds were greatly reduced in quantity during the recent war. These shortages gave rise to a great domestic expansion in soybeans, peanuts, and flax to supply our needs. Many kinds of oilseeds and vegetable fats and oils are usually available from foreign sources. The kinds and amounts imported during the past two decades have varied widely with changes in our domestic production and in prices in world markets.

TABLE 59. AVERAGE ANNUAL QUANTITIES OF SELECTED COMPETITIVE AGRICULTURAL IMPORTS FOR SPECIFIED PERIODS[a]
(In Millions)

Product	1918–1920	1932–1934	1938–1940	1943–1945	1946–1948[b]	1949[b]
Animal products:						
Wool, dutiable, lb.	[c]	32	90	850	561	268
Hides and skins, lb.	560	265	262	284	212	164
Cheese, lb.	10	53	55	18	18	32
Casein, lb.	15	4	21	31[d]	36	33
Canned beef, lb.	[c]	31	83	84	54	72
Vegetable products:						
Cane sugar,[e] ton	3,056	3,011	2,911	3,485	3,335	3,729
Copra, lb.	336	531	531	215	1,013	856
Castor beans, lb.	47	99	158	301	268	290
Flaxseed, bu.	15	13	17	9	2	[c]
Coconut oil, lb.	292	304	348	44	45	115
Palm oil, lb.	32	241	297	58	55	82
Tung oil, lb.	54	96	108	1	97	65
Linseed oil, lb.	14	3	[c]	56	72	1
Olive oil, lb.	35	122	94	5	20	20
Cotton,[f] bales	385	143	166	171	441	286
Tobacco leaf, lb.	84	56	63	70	79	81
Molasses, gal.	138	188	223	316	153	223

[a] Agricultural Statistics, 1942, 1946, 1947. Fiscal years except 1946–1948.
[b] *Foreign Agricultural Trade* (Office of Foreign Agricultural Relations), August, 1948, and April, 1950. Calendar-year basis. Preliminary.
[c] Less than one-half unit.
[d] Calendar years 1942–1944.
[e] Unit = 1,000 tons.
[f] Unit = 1,000 bales.

The postwar years 1946 to 1948 have been marked by high prices in the United States and by relatively lower tariff restrictions—a situation favorable to imports. Production in many countries, of course, has not fully recovered from the effects of the war. The relative position of the major competitive imports on a value basis during that period is shown in Table 60.

TABLE 60. AVERAGE ANNUAL VALUE OF COMPETITIVE AGRICULTURAL IMPORTS, 1946–1948 AND 1949*
(Calendar Years)

Product	Average value (millions)	
	1946–1948	1949
Animal:		
Wool, dutiable	$203	$165
Hides and skins	87	70
Live animals, for breeding and slaughter	49	69
Meat products	47	72
Dairy products	19	22
Miscellaneous	51	55
Total animal products	$456	$453
Vegetable:		
Cane sugar	$307	$372
Oilseeds	114	95
Vegetable oils and fats	98	72
Tobacco, unmanufactured	85	73
Vegetables and preparations	55	52
Nuts and preparations	52	48
Cotton and linters	49	23
Fruits and preparations	47	46
Molasses, inedible	25	15
Beverages and fruit juices	20	18
Grains	20	75
Feeds and fodders	20	24
Flax, hemp, jute	19	25
Miscellaneous	39	52
Total vegetable products	$950	$990
Total competitive products	$1,406	$1,443

* *Foreign Agricultural Trade* (Office of Foreign Agricultural Relations), August, 1948, and April, 1950. Preliminary.

The Postwar Position of Agriculture in Foreign Trade

The postwar position of agriculture generally and in the United States in particular is by no means clear. It is obvious that the situation for agriculture is not a problem separate from but rather a part of the whole problem of world trade. On the international level efforts have been made to ease the handicaps to trade through the International Monetary Fund, the International Bank for Reconstruction and Development, and the proposal for an International Trade Organization. Largely because of the world's disturbed political situation, the first two have been greatly limited in attaining their objectives and the last has not yet been ratified.

Immediately before the war the world had chronic surpluses of cotton, wheat, sugar, and coffee. The desire to maintain the enlarged capacity developed during the war, and the resumption of production in countries disrupted at that time point to further surpluses of these products and also of rice, oilseeds, fats, and oils. Questions arise, therefore, as to future outlets for United States products: cotton, wheat, lard, pork, soybeans, peanuts, rice, fruits, and possibly tobacco. Some of the countries which trade with us are largely agricultural and so must trade on the basis of their products.

Much has been heard since the war of dollar shortages and their effect on restricting purchases of our exports. From the foregoing it is evident that more dollar exchange to buy our products can be made available in three ways: (1) by further donations, which obviously is not a valid basis of trade; (2) by further loans, which are valid if based upon proper security and prospects for repayment, although interest payments will depend upon our receiving them in forms acceptable to the borrowing countries; and (3) through imports of goods and acceptance of services. In principle the position of the United States in international trade should be clear: to maintain our exports and receive payment for them we must also accept goods and services in return. In practice, however, we are only partially consistent with the principle for it runs counter to long-established attitudes and conflicts with interests of domestic agricultural and industrial groups which have profited by protection of their trade.

Summary

United States foreign trade in agricultural products is more significant in its effect on prices than in the proportion of products exported or imported. It affects us as consumers, producers, investors, and taxpayers. It is based fundamentally upon specialization of production but, in addition, becomes the tool for attaining many other objectives of national interest.

Restrictions upon world trade have become increasingly numerous and burdensome since 1914 as a result of disturbed economic conditions. The war severely damaged the productive capacity of many nations. The scarcity of goods and gold together with trade restrictions have made the pattern of foreign trade very confused. Much of our trade during and since the recent war has been financed by grants and loans of the United States. Unless these grants and loans are to be continued the balance of future payments to us must rely upon larger imports or foreign investments.

Historically agricultural exports of the United States increased until 1900. Since that date they have followed a downward trend which was interrupted temporarily by World War I and again by the recent war.

Contributing to this downward trend were our expanding population and an increasing rate of industrialization here, increased competition abroad, and a rapid expansion in the use of trade restrictions both here and abroad, particularly after 1930. The volume of imports of farm products has followed a similar though less erratic pattern. The recent war led to an expansion of farm production far beyond domestic needs and prewar export levels. The years since 1940 have also brought a heavy demand for exports involving products not previously important and on a scale far exceeding the value of imports. The downward adjustment of these emergency needs is already under way, leaving the outlook for exports uncertain.

Under the Reciprocal Trade Agreements the tariff policies both of the United States and of other trade-agreement nations have been modified. Other efforts to restore more normal world trade have been less effective. It remains to be seen whether broader bases for trade can be established to provide orderly world trade, to curb agricultural production in lines of chronic surplus, to ease the balance-of-payments problems, and to relax further the barriers to trade in a world of political uncertainty.

QUESTIONS

1. Why is there international trade in farm products?

2. What proportion of total United States farm production goes into export? What part for specific products?

3. How does foreign trade now differ from that during the past 35 years?

4. In what ways is foreign trade limited? Why are such restrictions used?

5. How do trade restrictions affect the movement of farm products between countries?

6. How are payments made between nations?

7. What agricultural products are important in United States exports? What shifts have taken place?

8. Distinguish between competitive and noncompetitive imports.

9. List the important farm products in each group.

10. What relation do these products have to our tariff structure?

11. During the last 50 years what have been the trends in our exports and imports of farm products?

12. Should American farmers be more concerned about our foreign or our domestic markets? Why?

13. Should the American market be reserved for American farmers? For American manufacturers?

14. Is the United States moving toward nationalism or internationalism in foreign trade? Why?

15. What relation do trade restrictions have to farm production programs in this country?

16. Why do politics and economics frequently disagree on trade policies?

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Chapter 12. AGRICULTURAL FINANCE

Agricultural finance is concerned with the acquisition and management of capital in the farm business. Nearly all farm businesses are operated as individual proprietorships. Farming like other kinds of business requires capital, but it is not necessary that the farm operator have all the capital which the business requires. The amount of capital he has largely determines his position on the agricultural ladder. Without capital he must usually work as a hired laborer; some capital may enable him to become a tenant; and still more a part-owner, a mortgaged owner, or a full owner. The ownership of a farm free from debt has long been held as an ideal by American farmers. So strong has been this ideal that farmers have often sacrificed greater income and taken undue risks in their attempts to attain it.

Agricultural finance includes a broad field: the principles of farm credit, the activities of lending agencies, and the ways in which farmers and farmers' organizations make use of credit. Our approach will be limited largely to that of the individual farmer: the place of capital, the means of acquiring it, the need for credit in agriculture, kinds of farm credit, qualifications of borrowers, characteristics of a good loan, agencies providing credit to farmers, and the relation of credit to price levels.

The Place of Capital

Farming in its simplest form requires land and some equipment, especially buildings and machinery. As usually carried on it involves also livestock and feed. All these require capital to be invested. Expenses are incurred before products are ready for sale, and these call for working capital. The total investment in a farm business represents many times the annual net income. The aggregate amount of capital associated with farms in the United States was the huge total of nearly 54 billion dollars in 1940 and 122 billion dollars in 1948 (Table 61). Of these amounts 49 billion dollars and 100 billion dollars, respectively, represented capital invested in the business and household equipment, and 5 billion dollars and 22 billion dollars were financial assets or reserves. Debts in these years were 9 billion dollars and 10 billion dollars, leaving the amounts owned above debt

nearly 44 billion dollars and 113 billion dollars. These high figures for 1948 were, of course, influenced by the high price level. If the values for that year are reduced to the 1940 price level, the total assets were 74 billion dollars and the equity above debts, 65 billion dollars. Thus without price increases the net value of agriculture increased 48 per cent between these dates.

TABLE 61. COMPARATIVE BALANCE SHEET OF AGRICULTURE, UNITED STATES, JAN. 1, 1940 AND 1948*

Item	1940 (millions)	1948 (millions)	1940, %	1948, %
Assets				
Physical assets:				
Real estate	$33,642	$62,813	62.5	51.5
Non-real estate:				
Livestock	5,133	13,451	9.5	11.0
Machinery and motor vehicles	3,135	9,174	5.8	7.5
Crops stored on and off farms	2,645	8,830	4.9	7.3
Household equipment†	4,275	5,415	8.0	4.4
Financial assets:				
Deposits and currency	3,900	15,600	7.3	12.8
United States savings bonds	249	4,745	0.5	3.9
Investment in cooperatives	826	1,916	1.5	1.6
Total	$53,805	$121,944	100.0	100.0
Claims				
Liabilities:				
Real estate mortgages	$6,586	$4,882	12.2	4.0
Non-real estate debt:				
To principal institutions	1,983	2,383	3.7	2.0
To others‡	1,455	1,800	2.7	1.4
Total	$10,024	$9,065	18.6	7.4
Proprietors' equities	43,781	112,879	81.4	92.6
Total	$53,805	$121,944	100.0	100.0

* A. S. Tostlebe *et al.*, The Balance Sheet of Agriculture, pp. 1-2. U.S. Department of Agriculture Miscellaneous Publication 672, 1948.

† Estimated valuation for 1940 plus purchases minus depreciation.

‡ Includes individuals, merchants, dealers, and other miscellaneous lenders.

The very prosperous financial situation of agriculture in 1948, as indicated by the high value of total assets and the low proportion of debt, is quite likely to obscure the financial problems which confront some farmers in any period and which in past periods of low prices have been almost universal. How closely the financial situation of agriculture is tied to the general economic level is shown by changes in the total value of physical

assets (excluding household equipment). From a value of 42 billion dollars in 1910, these assets increased to 80 billion dollars in 1920, the peak price year of the World War I period; then declined to 36 billion dollars in 1933, the low year of the depression; they recovered to more than 44 bil-

TABLE 62. INVESTMENT BY FARM TYPES AND STATES IN THE MIDDLE WEST, ADJUSTED TO 1945 BASIS*

Types and states	Total acres	Average investment		
		Real estate	Non-real estate	Total
Northern general:				
Nebr., eastern	163	$19,313	$5,488	$24,801
Ill., central and northern	142	18,783	5,596	24,379
Minn., southeastern	155	15,054	7,538	22,592
Mich., central	124	13,470	4,685	18,155
Ohio, north central	106	11,130	5,012	16,142
Dairy:				
Ill.	142	20,211	7,866	28,077
Ind., northern	108	15,796	6,258	22,054
Iowa	108	14,894	7,418	22,312
Wis.	116	12,780	6,927	19,707
Cash grain:				
Ill., central and northern	220	50,772	9,941	60,713
Iowa	180	17,272	8,111	25,383
Nebr., eastern	172	20,498	4,358	24,856
Hog raising:				
Nebr., eastern	167	23,698	8,096	31,794
Ill.	128	21,438	6,850	28,288
Iowa	149	17,788	8,208	25,996
Ind., central	111	17,141	7,930	25,071
Cattle feeding:				
Ill., central and northern	223	37,859	15,450	53,309
Iowa	243	31,102	16,640	47,742
Nebr., eastern	183	28,627	11,691	40,318
Southern general: Ill., southern	150	10,483	3,838	14,321
Tobacco and livestock: Ky.†	171	13,501	3,679	17,180

* Capital Needed to Farm in the Midwest, pp. 10, 12. Minnesota Agricultural Experiment Station Bulletin 389, 1946.

† Located in outlying bluegrass and pennyroyal type of farming areas.

lion dollars in 1940 and to the high point of 94 billion dollars in 1948. On the other side, debts on real estate alone rose from 3 billion dollars in 1910 to nearly 10 billion dollars in 1925, held above 9 billion dollars through 1932, then declined, falling below 5 billion dollars in 1945. Postwar price adjustments will likely again place more emphasis upon financing prob-

lems, although the extreme situation of the depression period is not likely to recur.

Financing agriculture is not a single problem, but consists of the combined problems of a large number of individual farm units. For each unit the financing problems are different, for the welfare of the farmer and his family depends not only on securing the right amount of capital, but also upon how well this capital is invested in a business of economic size and upon the degree of managerial ability with which the whole farm is operated. It is the combination of these elements which produces the income necessary to retire debts or to accumulate reserves. The amount of capital and the type of management would be expected to vary with different areas and different types of farming. That this is so is illustrated by average investments in groups of established farms in Middle Western states (Table 62). These figures represent the physical assets (excluding cash operating reserves and household equipment) adjusted to the 1945 price level. Total average investments per farm ranged from $14,000 to more than $60,000; real estate from $10,000 to more than $50,000; and non-real estate from less than $4,000 to nearly $10,000. In five of the 21 groups shown the real estate investment was below $20,000, and in seven the non-real estate investment was below $6,000. In area these groups of farms averaged 106 to 243 acres, representing the smaller family size units. Other geographic sections and types of farming would show still different investment patterns.

How Capital Is Acquired

Capital may be acquired in one or more of four ways: by gift or inheritance, marriage, saving, and borrowing. For the man who receives as a gift or inherits cash or a farm, equipped and fully paid for, the problem of acquiring capital is solved; his problem is one of management. Often an inheritance in land includes debts as well as assets, and these debts must be paid off sooner or later. Even more commonly a farm is left to several heirs. Usually it is not good policy to divide the farm, and some of the heirs may desire their portions in money rather than real estate. The farm may be sold and the proceeds divided; one heir may operate the undivided estate as a tenant; or he may assume ownership and contract to pay off the other heirs. In any case he has acquired capital; in two of these cases an equity in the farm, and he may also have acquired difficult problems of financing as well.

Acquiring capital by marriage is not greatly different from that by inheritance. Much the same problems arise, particularly if the capital is in the form of real estate and carries debts against it. Whether capital is

acquired by marriage or inheritance, its acquisition does not necessarily provide experience for its management.

Most capital is the result of saving, of spending less than one's income. This practice is a good financial rule at any stage, but is particularly important for the beginner or for the accumulation of a reserve for expanding the business or for greater security. The accumulation of some capital by saving may be slow, but it often makes possible the borrowing of additional capital.

Capital may also be acquired by borrowing, *i.e.*, by renting capital saved by others. This method involves an element of risk but provides an opportunity of progressing at a faster rate than by saving. Indeed, certain steps toward farm ownership can scarcely be achieved without borrowing, and many operations on the farm may be undertaken by using borrowed capital that would be seriously limited if not impossible without it. Much of the consideration given to agricultural finance centers about the means of getting, safeguarding, and repaying borrowed capital.

The Need for Credit in Agriculture

Few men who desire to farm have enough capital to get started without financial assistance. Those who are established often do not have funds available when needed for constructive purposes. For short-term purposes it may be more desirable to borrow than to keep funds available which would be idle during most of the year.

Demands for extra funds arise from many sources. Crop production is highly seasonal; heavy expenses are incurred for labor, seed, motor fuel, and the like several months before the crop is ready to market. At times weather hazards destroy all or a large part of the crop and reduce the expected income. Conditions may indicate the desirability of holding rather than marketing a crop at harvest time. Livestock enterprises require periods of different lengths to pay out. One class of cattle may be fed for two months, others for different periods up to 18 months. An investment in a dairy or beef herd may not be fully repaid for several years. Machinery has to be acquired and replaced as it wears out. Price declines may reduce incomes and make borrowing necessary. Emergencies may arise also because of accident, illness, fires, tornadoes, or other causes. Operating and personal expenses of these kinds occur with both owner-operators and tenants.

The system of tenancy fills a distinct credit need for it enables a man with limited capital to farm a unit of economic size, the landlord furnishing the real estate capital. This capital combination of tenants with limited capital and landlords, usually without facilities to farm, applies to more

than 60 per cent of the farms in some counties. In the South the averages for some whole states exceed this figure.

In acquiring farm real estate it is usually necessary to buy a farm large enough to make an economic unit for the kind of farming to be followed. The whole farm must be bought at once; it is not available by shares as is the stock of a corporation. Moreover, the rate of turnover is slow. Under normal conditions a period of 25 to 35 years is necessary to pay for a farm from its income. For most buyers these conditions mean the use of substantial amounts of credit over a long period of years. Maintenance outlays at times may be high to construct new buildings or provide drainage or soil conservation.

The need for credit is particularly great when a man becomes a tenant and when he becomes an owner. At such periods he must usually rely heavily on credit and assume abnormal risks to achieve the change in position.

Kinds of Farm Credit

The need for agricultural credit is determined in part by characteristics peculiar to farming. Such characteristics are the seasonal nature of production, susceptibility to unusual hazards, high credit needs in relation to gross income, relatively small business units and small-size loans, long distances between the farmer and lending agency, wide fluctuations in prices of products, close relationship between the farm business and farm home, and the aspiration toward farm ownership.[1] Because of these characteristics, types of credit developed for industrial use have often been poorly adapted to farmers' use, hence the demand for special kinds of agricultural credit.

Credit as applied to farmers may be classified in many ways. One classification is for consumption and farm-business purposes. Consumption credit applies to cases in which the return is measured in personal enjoyment and standard of living rather than in its direct effect upon the farm income. A vacation trip, furniture, household equipment, clothing, an automobile for personal use, or improvement of the farm home are illustrations. A washing machine is a personal outlay and that for a cream separator is business. Even this distinction is not clean-cut; the washing machine is used to wash clothing for the hired man, and the separator provides cream for the family's breakfast. The use of credit for consumption purposes is often questioned. It, of course, can be misused like any other kind of credit; the real test is whether there will be ample funds to pay the loan when it comes due.

[1] William G. Murray, How Should Agriculture Be Financed? *Journal of Farm Economics*, Vol. XXII, No. 1, February, 1940, p. 142.

Farm-business credit is borrowing to carry on farm production or to assist in farm ownership. Such credit may be classified as to length of loan, its purpose, the security required, the kind of lender, or the type of borrower.[2] Our consideration will be directed particularly to the purpose of loans and the sources from which they may be secured.

Loans for farm production are used in many ways: farm-operating expenses, such as feed, seed, fertilizer, hired labor, and motor fuel; purchase of livestock for feeding, breeding, or dairy purposes; marketing expenses; purchase of machinery and equipment; ordinary repair of buildings and fences; payment of rent, taxes, and property insurance; and refinancing loans for such purposes. The so-called "barnyard loan" often defies classification on this basis, for it may be used to finance several purposes, or to refinance loans involving more than one aspect of production. Production loans are for relatively short periods. Some authors limit production or short-term loans to those which can be paid out of a single production period, such as a crop or a livestock feeding operation. Loans for equipment, breeding stock, and repairs are then classed as intermediate loans. While there are differences between the two, there is much overlapping, the same sources provide both, and the intermediate term loans, while requiring more than a year for repayment, are often written for a year with renewal privileges. From the standpoint of purpose both are for production; hence they are treated together.

Real estate loans, sometimes designated as mortgage loans, are used to purchase a farm; to buy additional land; to make farm improvements, such as new bulidings, major repairs on buildings, drainage or conservation facilities; and refinancing for such purposes. These are normally long-term loans. Real estate loans are sometimes used for production purposes, when the total amount involved exceeds the ability to pay within production loan limits, or to refinance an overload of short-term obligations.

Qualifications of Borrowers

In making loans lending agencies are risking either their own capital or that of others entrusted to them. To reduce this risk borrowers are expected to meet certain qualifications. These include a favorable position as to the character of the man, his financial position and progress, his repayment capacity, the purpose of the loan, and his security or collateral.[3]

The character of the man is measured both by his honesty and his ability. His honesty is attested by the reputation he has acquired, how

[2] William G. Murray, Agricultural Finance, Rev. Ed., Ames: Iowa State College Press, p. 16.

[3] Credit Fundamentals. University of Illinois Vocational Agriculture Service, Unit 90, 1948.

he meets his financial obligations, and the accuracy of the information furnished. To be a safe risk he should have also a thorough knowledge of the work he is undertaking, ability to manage it, to apply improved methods, and to keep losses to a minimum.

The financial position of the borrower is commonly shown by a net worth statement which shows his assets, his debts, and his equity or net worth at the time. The amount of capital under his control, his equity in it, and the kind and amount of debts have much to do with his ability to repay. His progress is measured by the extent to which his net worth increases from year to year.

The farmer's repayment capacity is best shown by a well-kept farm record book which shows his net income after operating expenses and depreciation are deducted. It should show also some basic measures of management such as size of business, crop yields, livestock production, sources of income, and control of expenses. The level of living costs also affects repayment ability. Capacity to pay should include also a definite plan of repayment. For a going business, capacity to pay outranks security.

Funds borrowed should in most cases be for productive purposes and should be applied to the purpose for which they were secured. Purposes differ greatly in their urgency. Seeds, feed, and motor fuel are necessities if the business is to go on. Some less urgent purposes often can be deferred or ruled out if judgment and self-restraint are employed.

Security or collateral guarantees payment in case the anticipated means of repayment fails. The ability of the borrower to pledge assets to a lender goes back to the net worth statement—to the amount of net worth and the debts outstanding against the assets. In cases in which loans have been secured from several lenders unpledged assets may be in a risky position if one lender attempts to collect his loan.

The emphasis placed upon these qualifications varies among lenders. Character loans, supported only by a note of the borrower, are frequently made. Some borrowers can satisfy all the qualifications; others cannot. The borrower and lender have mutual interests; both suffer if credit is extended too easily. A good credit rating is a valuable asset.

Characteristics of a Good Loan

The most effective use of credit in agriculture calls for those characteristics in a loan which will fit it to a farmer's needs and ability to repay. These characteristics may be classified as the length of term, the amount of the loan, its cost, method of repayment, and service provided.

The length of term is properly related to the purpose of the loan and should provide for completion of the project and liquidation of the loan from the receipts. Short-term loans for crop production or buying feeder

stock should mature when the crop or livestock is expected to be sold. Those for purchase of machinery or dairy cattle usually require more than a year to repay, so if limited to a year should provide for renewal. Real estate loans must usually run for a period of years. Straight-term loans for 5 years or more should be limited to cases in which the means of payment is certain. In most cases annual reduction of principal is desirable. For this purpose real estate loans are commonly amortized for periods of 20 to 40 years. In areas of high risk the shorter periods are preferable. A long period requires smaller annual payments but larger total payments, while a short period means higher annual payments but less total cost. The length of term should not be too long; examination of one application to refinance a "barnyard" loan disclosed that the original loan had been secured to buy a team of horses 15 years earlier.

The amount of the loan should be adequate to supply the needs of the borrower, be repayable out of income, and not exceed a safe relationship to the security. For many short-time needs a budgeted basis is desirable, permitting funds to be drawn as needed and retired as cash becomes available. For real estate loans the amount is based upon appraisals which evaluate carefully the current value and productive capacity of the property. For high-risk areas subject to unusual climatic hazards, excessive erosion, or in which the type of farming is changing, rigid limitations on the amount of loans safeguards both borrower and lender.

Reasonable cost is one mark of a good loan. The cost involves not only the stipulated interest rate, but also other fees for applications, appraisals, commissions, attorney and abstract service. Lenders differ in the extra fees assessed upon the borrower. Interest rates vary also with the purpose of the loan, the degree of risk, and the lending agency. Short-time credit from credit institutions is cheaper than that from merchants, though the credit cost of the latter may be concealed in the price of the product. Loans of small size necessarily involve high overhead costs. If interest is deducted in advance, the real cost is higher than if it is paid at maturity. On budgeted loans interest charges may be based upon the amount of the loan outstanding or on the entire credit account for the full contract period. On real estate loans both the rate of interest and the length of the loan affect the interest cost. For a loan amortized on a 20-year equal-payment plan at 4 per cent, total interest amounts to 46 per cent of the principal; at 4½ per cent to 53 per cent of the principal; and at 5 per cent to 59 per cent of the principal. For a 30-year period at the same interest rates, total interest cost would be 73 per cent, 83 per cent, and 94 per cent, respectively, of the principal.

Repayment of interest and principal is easier if planned for convenient seasons. Crop and feeder livestock loans can be most readily liquidated

when the product is sold. Monthly payments from milk checks may be more acceptable to the borrower to retire a loan for purchase of dairy cows. The amortized type of real estate loans provides for periodic reductions in principal as well as interest payments. Provision should be made, too, for payment of additional amounts when extra income is available and the interest stopped, for prepaying reserves for low-income years, and for total repayment ahead of schedule without penalty. Knowledge that the lender is able and willing to work out an adjustment for adverse conditions outside the control of the borrower gives assurance.

Finally, the borrower should look for service that is prompt, courteous, and businesslike, and based upon an understanding of his needs. This service can be used to better advantage if the office where loans and contacts are made is within a convenient distance.

Lending agencies vary in the terms offered on loans. Possibly all the desirable characteristics cannot be secured in one loan. Shopping for credit is not greatly different from shopping for farm equipment. Whether the contract is for a few months or for a long period of years the farmer should evaluate the terms offered and select that which best suits his conditions.

Amortization and Normal Value. To amortize (literally, to kill off) a loan is to make periodic payments which not only pay interest but also pay off the principal during the loan period. It is popularly called "the loan that never comes due." Two plans are used. Under the usual standard plan payments are of equal amounts and apply first to accrued interest and the remainder to principal. Under the Springfield plan each payment provides for an equal amount to be applied on the principal plus the accrued interest. The first payments are larger and diminish as the loan period progresses. For farmers payments are usually made on a semiannual or annual basis.

Normal value is defined as "the amount a typical purchaser would under usual conditions be willing to pay and be justified in paying for the property for customary agricultural uses, including farm-home advantages, with the expectation of obtaining average production and of receiving normal prices for farm commodities."[4] This concept was developed during the depression years on the basis that farms are paid for over a long term of years and therefore justified appraisal at higher rates than prices of farm products at that time would support. It provided a means by which many distressed farm loans could be refinanced. At that time the prewar level (1910–1914) of prices of farm products was accepted as normal. In applying it estimates were made of the expected physical production and sales of the farm and the income valued at the

[4] Annual Report of the Farm Credit Administration, 1946–47, p. 33.

"normal" price level was capitalized. Conversely, in a period of abnormally high prices of farm products and farm land values normal value acts to reduce the amount that may be paid for land on a sound long-time basis.

Agencies Providing Credit Directly to Farmers

Of the four divisions of the Farm Credit Administration, two make loans directly to farmers. The local agencies are the production credit associations, organized under the production credit corporations, and the national farm loan associations, organized under the Federal land banks. The other two, the Federal intermediate credit banks and the banks for cooperatives, do not make loans directly to farmers, but are an important part of the agricultural credit system. The Federal intermediate credit banks act as wholesale agencies of credit. They discount farmers' agricultural and livestock notes for production credit associations, local banks, or other credit agencies and make loans to them on the security of such paper. The intermediate credit banks in turn use this paper as collateral for issuing securities which are sold to large investors throughout the country. The banks for cooperatives, as their name implies, provide credit to cooperative associations engaged in marketing agricultural products, purchasing farm supplies, and furnishing farm business services.

Agencies providing direct credit to farmers are discussed briefly under three classifications, those which provide usual production or short-time credit, real estate or long-time credit, and credit to low-income farmers.

Production Credit. Credit for production purposes is available to farmers from commercial banks, production credit associations, individuals, merchants or dealers, Commodity Credit Corporation, and finance companies. The terms under which loans are made by these agencies vary greatly.

Commercial Banks. Commercial banks make by far the greatest amount of non-real estate loans to farmers (Fig. 26). These banks, and particularly those in the rural areas, are in a favorable position to extend short-time credit. Farmers go to the banks for checking and banking services, the financial position of its customers is known to bank officials, and little red tape is involved. Some banks have established agricultural departments with an agriculturally trained man to service farm loans. Interest rates vary widely. Availability of bank loans is by no means uniform from area to area or from one time to another since it depends both upon the amount of loanable funds and the current lending policies of local bankers. The funds loaned are based upon deposits and savings accounts.

Production Credit Associations. Production credit associations are cooperative credit organizations and extend credit to their members. As a part of the nation-wide federally sponsored credit system loans are avail-

able in all parts of the country through one of the 503 local associations (as of June 30, 1948). Borrowers must purchase $5 of class B capital stock for each $100 or fractional amount of the loan. Each such stockholder has one vote in electing the board of directors of the association. Interest rates are regulated by law which provides for a limited variation in line with local conditions. Funds are obtained largely by discounting farmers' notes with the Federal intermediate credit banks.

NON-REAL-ESTATE LOANS HELD BY ACTIVE COMMERCIAL BANKS, FEDERAL AND FEDERALLY SPONSORED AGENCIES, UNITED STATES, JAN. 1 AND JULY 1, 1910-50

(EXCLUDES NONRECOURSE COMMODITY LOANS HELD OR GUARANTEED BY CCC)

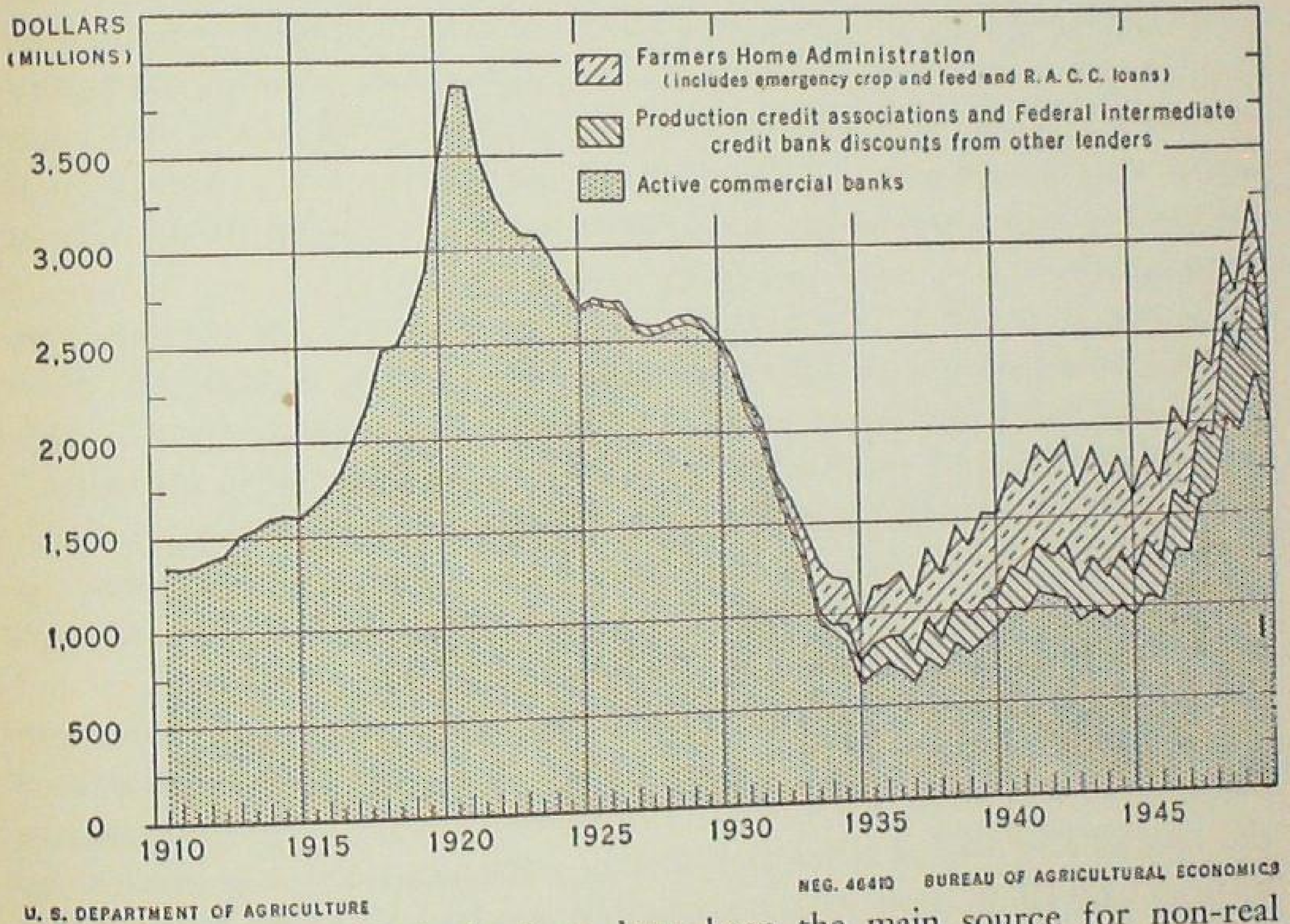

FIG. 26. Commercial banks have long been the main source for non-real estate loans. Since 1933 Federal agencies have also been important sources of such credit.

Individuals. Individuals provide an undertermined amount of production credit. Among such individuals are landlords who furnish credit for their tenants; relatives, such as fathers aiding sons; and friends. Such loans are likely to be closely tied to personal interests. The terms of the loans depend largely upon individual arrangements, although interest rates follow those of local banks.

Merchants or Dealers. Merchants who sell farm supplies and dealers who buy farm products extend much credit to farmers. Merchants extend

credit because it helps them to secure business, but such credit is costly, as many studies have shown. The amounts are often small, the losses are considerable, and additional expense is incurred for accounting, office supplies, and collection. Some merchants recognize this cost and sell only for cash; others have one price for cash and a higher one for credit business. Those who make no difference must take a higher margin; thus the cost of merchant credit is often concealed in the price.

Commodity Credit Corporation. Loans on stored crops, chiefly corn, wheat, and cotton, are made or guaranteed by the Commodity Credit Corporation. These loans, most of which are made through banks or other agencies, are part of the price-support program, and are nonrecourse loans. The farmer may sell the mortgaged commodity and pay off the loan plus 3 per cent interest if the price goes above the loan rate; otherwise he may deliver the commodity in full payment of the loan and the interest is canceled. Because of price declines large volumes of products were put under seal with this kind of loan in 1948 and 1949. The corporation is financed by the government, and its operations are subject to changes in farm legislation.

Finance Companies. Finance companies extend credit for the purchase of automobiles, household equipment, and miscellaneous purposes. Such companies often advertise extensively by mail and radio to supply "cash quickly, easily, and in complete confidence, on your own signature." The amount that may be borrowed is usually limited by state laws. Rates vary running as high as 3½ per cent per month. Such credit obviously is not adapted to a farm business and is not important in total amount, though some farmers use it.

Some form of security is normally required on production or short-term loans. The most frequent form is a chattel mortgage covering personal property of the borrower, usually in an amount considerably greater than the face of the loan. Thus a loan to buy feeder cattle would usually be secured by a chattel mortgage on the cattle and feed; one for crop production by a mortgage on the crop; and to buy machinery on the machines bought and other personal property. Credit sales of machinery and other equipment are frequently made on title-retaining notes. This method avoids expensive court costs in case of failure to pay. Collateral, such as government bonds, life insurance policies, or other securities, may be deposited with the lender instead of a chattel mortgage. Unsecured loans are frequently made by individuals or local banks when the character and financial position of the borrower are well known to the lender.

Real Estate Credit. The major sources from which farmers may secure real estate or long-term credit are life insurance companies, national farm loan associations, individuals, and commercial banks (Fig. 27). The terms

of loans vary greatly. The amortization principle of periodic payments to pay interest and to reduce the principal has been quite generally adopted, although some agencies also offer straight-term loans. In the best lending areas competition has tended to level out interest rates, although lenders differ in methods of handling other costs.

Life Insurance Companies. Life insurance companies are interested in long-term high-grade investments. For this reason they usually limit farm

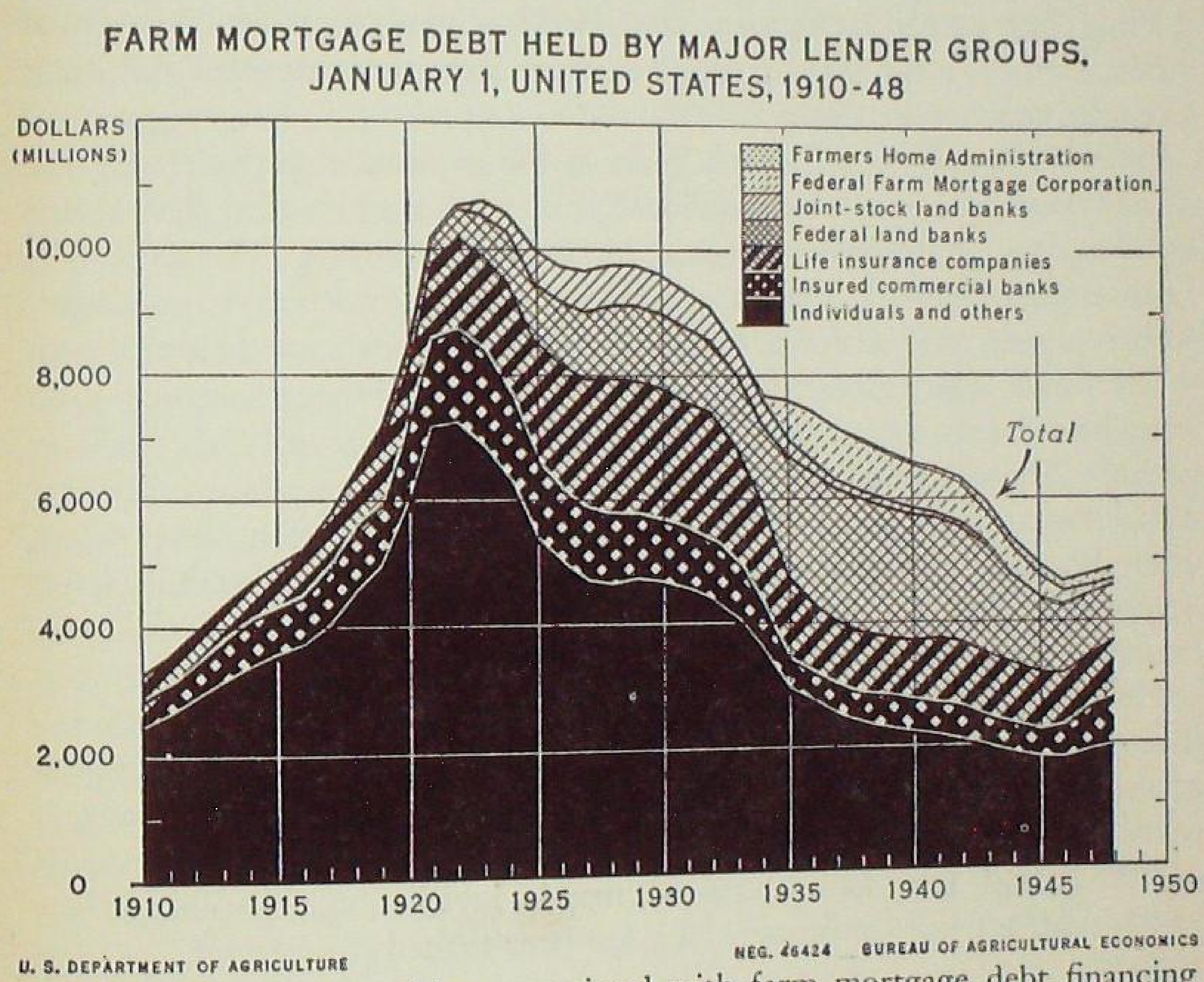

FIG. 27. The acute problems associated with farm mortgage debt financing from 1920 to 1935 caused much shifting in the positions of creditor agencies. Since 1935 the situation has been more stabilized.

real estate loans to the better farming areas. Lending policies are thus dependent on company policy rather than agricultural credit needs. Loans are made directly to farmers through branch offices located in the lending territory and indirectly through local banks, mortgage companies, correspondents, and brokers. The rapid increase in land values, 1940 to 1948, and the competition to make loans exerted a heavy upward pressure on loan standards. This was to the advantage of the borrower if the credit granted was not beyond his ability to repay.

National Farm Loan Associations. The national farm loan associations,

and the parent Federal land banks, are cooperative credit organizations, now fully farmer-owned. A borrower must purchase stock in the local association to the amount of $5 for each $100 or fraction thereof of the loan. Through the 1,257 local associations (June 30, 1948) loans are available in all parts of the country. Because some other agencies limit their lending territory, the national farm loan associations are the most important lenders in areas of lower land values or of higher risks. Loans are wholly amortized for periods usually of 20 to 34½ years, at a 4 per cent interest rate. The lending limit on real estate loans since 1945 has been 65 per cent of normal value. Authority for making supplementary loans through the Land Bank Commissioner expired July 1, 1947.

Individuals. Except for two years in the depression period the value of real estate loans made by individuals since 1910 has exceeded that of any other agency. These loans enter the picture in many ways. The seller of a farm often accepts a mortgage from the buyer and thus becomes a lender. Relatives may provide funds for land purchase, and other individuals may invest funds either directly or indirectly in farm mortgages. Along with individuals are various organizations which desire to invest funds for long periods. Endowed institutions such as colleges and hospitals are illustrations. Loans from individuals have less permanence than those from organizations. In the relationships of borrower and lender much depends upon the extent of their mutual interests. A wide range of terms would be expected to prevail.

Commercial Banks. Because of the character of their assets and the demand that may be made upon them, commercial banks are better suited to make short-term than long-term loans. For some kinds of banks legal restrictions limit the funds that may be used for longer term investments and the periods for which such funds may be invested. As indicated earlier banks frequently make loans which are later turned over to other credit agencies.

As noted above a distinction frequently arises between agencies which originally make real estate loans and those which in reality furnish the funds and receive the interest from the loan. That loans are transferred is an advantage to the borrower in that he may have access to a wider range of investment funds, and to the lender in providing a wider outlet.

The usual security for a real estate loan is a first mortgage on the real estate. A mortgage is equivalent to a deed to the property. The title reverts to the borrower if he fulfills the conditions of the loan contract. In some transactions funds are secured from two sources. In that case the major lender takes a first mortgage and the lesser lender a second mortgage. In case of foreclosure the first mortgage must be fully liquidated before the holder of the second receives anything.

Credit for Low-income Farmers. Even in prosperous times there are large numbers of farmers and of people who wish to become farmers who cannot qualify for credit from the usual agencies, because of meager assets and low incomes. The Farmers Home Administration was created in 1946 to aid such families to get ahead so they can later qualify for ordinary types of credit. It is the outgrowth of depression-relief work begun in 1934 and replaced the Farm Security Administration. The loans made go beyond the extension of credit, for a farm and home-management plan is developed and supervision and assistance given during the loan period. Three types of loans are made.

"Annual" loans are made for seasonal or emergency needs and are normally for small amounts. "Operating" loans for production and subsistence are made for securing livestock, farm and home equipment, feed, seed, fertilizer, and other essentials. These loans run from 2 to 5 years with interest at 5 per cent on the unpaid balance, repayable in yearly installments in line with the borrower's expected income. The plans provide for making each family as self-sufficient as possible in its food supply.

Loans have been made since 1937 also to tenants to purchase farms. A "direct" loan can be for as much as 100 per cent of the purchase price, amortized for a 40-year period at 4 per cent with repayments on a variable basis (Fig. 27). Funds for the annual, operating, and direct land-purchase loans are appropriated by Congress. For an "insured" loan, the borrower makes a down payment of 10 per cent and the 90 per cent is advanced by an outside agency, the mortgage being insured by the government. Otherwise the terms are like those of a direct loan.

Veterans have been given preference in these FHA loans. To date the plan of making loans to low-income farmers, aided by a rising price level, has been quite successful. Its scale of operation has been limited by the amount of funds appropriated. It has not yet encountered a severe test of falling prices. While these types of credit have been popular, there is much difference of opinion as to how far the government credit should be used in a program whose primary purpose is social progress.

Price Levels and Credit

The judicious use of both production and real estate loans is closely related to current and prospective price levels. Moreover, a part of our present agricultural credit structure has been developed as a result of the vicissitudes of price levels during the past 40 years. A brief review of agricultural financing problems during this period will show the significance of price levels and why some of our present credit agencies were created.

Credit Problems, 1910 to 1949. The general picture of farm produc-

tion, prices, and income since 1910 has been presented in earlier chapters (Tables 9, 10, 11, and 15). Except in the heavy-producing cotton states of the South, the value of land and buildings had followed an upward trend from 1860 to 1910 (Table 4). Since 1910 these values have followed the same general trends as prices of farm products. Land values rose to a high point in 1920, when they were 70 per cent above the 1912 to 1914

TABLE 63. VALUE OF LAND AND BUILDINGS PER ACRE, UNITED STATES AND SELECTED STATES, 1910–1949*

Year	United States	Mass.	Pa.	Ill.	Nebr.	Miss.	Texas	Calif.
1910	$40	$68	$56	$108	$47	$18	$16	$52
1920	69	99	75	188	88	43	32	105
1925	54	108	72	137	60	29	28	115
1930	49	130	79	109	56	33	29	112
1935	31	116	54	70	34	19	19	76
1940	32	109	59	82	24	25	19	71
1945	41	128	67	116	36	33	25	99
Index numbers† (1912–1914 = 100)								
1915	103	98	100	102	101	97	103	111
1920	170	140	140	160	179	218	174	167
1925	127	132	114	115	123	136	146	164
1930	115	131	107	91	113	122	138	160
1935	79	111	82	61	72	90	91	115
1940	84	113	90	75	58	106	99	121
1945	126	133	123	112	86	165	137	193
1946	142	141	130	124	96	196	150	219
1947	159	145	143	141	108	216	165	244
1948	170	154	154	150	126	238	187	234
1949‡	175	159	165	158	139	251	187	215

* U.S. Census. Figures rounded to nearest dollar.

† Current Developments in the Farm Real Estate Market. U.S. Department of Agriculture, April, 1949.

‡ Preliminary.

average; then declined until 1933, when they were at a point 27 per cent below prewar. The increase was moderate from 1933 to 1941, then at a sharply accelerated rate to 1948, when real estate values were 77 per cent above the 1912 to 1914 average and 4 per cent above the 1920 peak (Table 63 and Fig. 28). From this 1948 peak some decline took place but an upward trend was resumed late in 1950. Land values by states show greater variations than those for the country as a whole. Likewise counties with

the more productive land greatly exceed the state average. In Illinois, for example, land values in some counties were nearly double those for the state in the land booms associated with both war periods.

The Upswing, 1910 to 1920. During periods of rising prices, production or short-term loans expand in total amount as a result of more loans and of higher prices. They occasion little difficulty while prices are rising because the value of products by which they are paid is also rising. In a period of falling prices, however, particularly if the decline is rapid, they

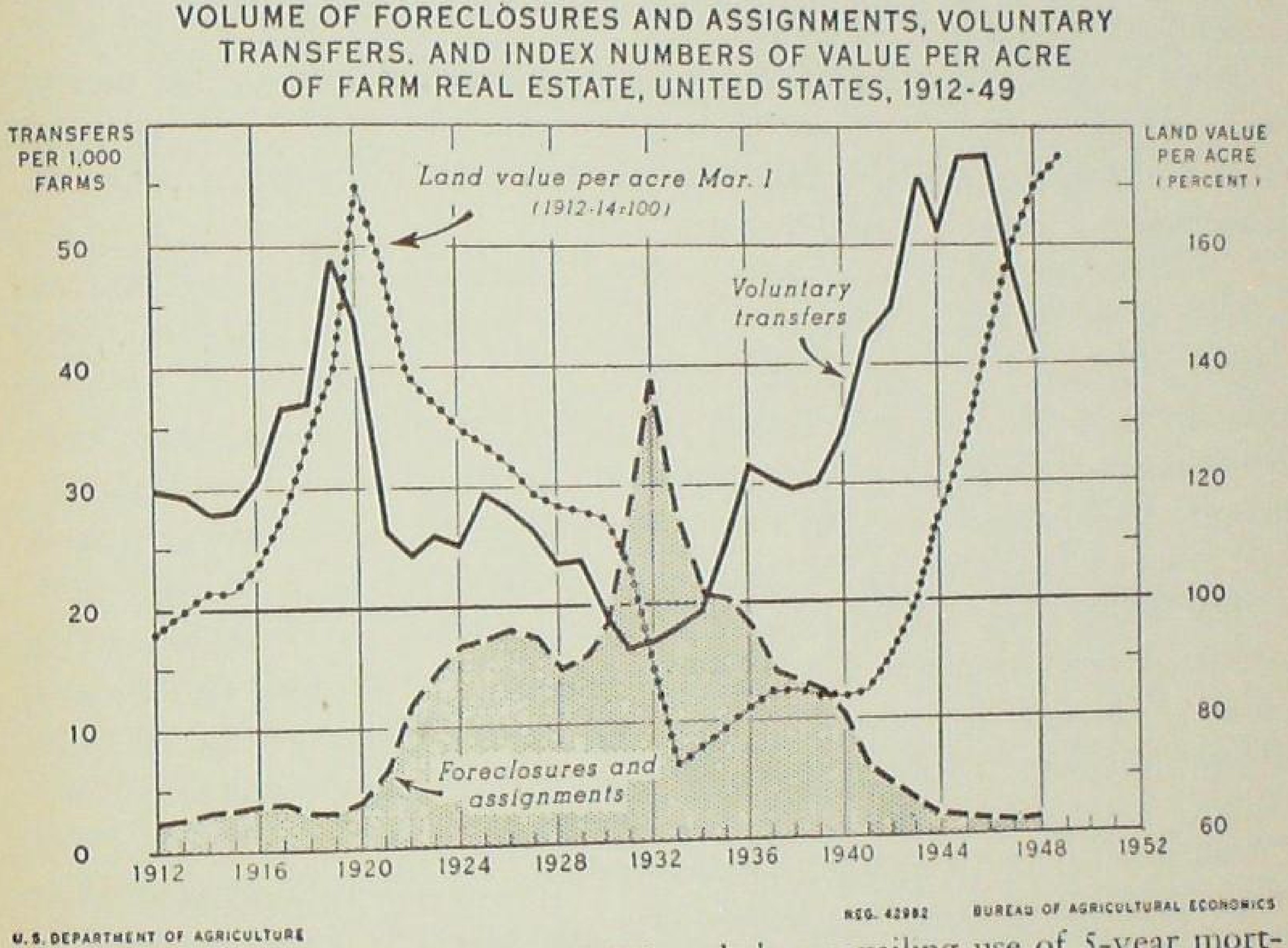

Fig. 28. Falling land prices after 1920 and the prevailing use of 5-year mortgages led to a very sharp rise in loss of farms. In the recent land boom less dependence has been placed on credit and most loans have been amortized over much longer periods.

run into serious difficulty. Following 1920 and 1929 such difficulties were widespread.

Real estate loans likewise are susceptible to price changes but in a different way because of the longer periods of time involved. During the long period of rising land values from 1860 to 1920 most real estate loans were made for a 5-year period, some for even shorter periods, and occasionally for 7 or 10 years. Annual payments were required for interest only, the entire principal being payable at maturity. Credit on this basis was considered satisfactory; from the lender's standpoint the value of the security was steadily becoming greater; from that of the borrower the

loan represented a decreasing proportion of current value. Neither the lender nor borrower expected that the loan would be paid off at maturity; with increasing land values renewals could be made with little difficulty.

As values increased rapidly, particularly after 1916, the total value per farm was larger, involving larger amounts of credit. Many persons during the boom bought farms with only a small down payment, expecting to turn them again and make a profit. Moreover, a rising trend of land prices, and especially a land boom, stimulates buying. This is natural, for the sooner one buys the lower will be the price to be paid, and if he is a speculator, the greater the chance for profit.

Short-term loans expanded somewhat in the earlier years of the period, more rapidly after 1916, and at a very high rate during the postwar boom. It was a period of optimism with heavy investments in livestock, machinery, and farm improvements.

The Downtrend, 1920 to 1933. The sharp reversal in prices of farm products about the middle of 1920 quickly changed the picture. Land values fell quickly, prospective buyers postponed action, for in a falling market the longer one waits the lower the price is likely to be. Many who had bought at high prices with small down payments found interest payments excessive and soon lost the farms. The problem had changed from one of acquiring credit to one of paying for credit previously acquired.

The falling price level not only destroyed land values, but made current payments of interest and principal more difficult. It also undermined security for it is the buyer's equity and not the mortgage that shrinks. Many short-time debts, particularly for livestock and machinery purchased, could not be paid and had to be refinanced with real estate loans. Credit was harder to get. The last result became painfully apparent when the 5-year mortgages of the boom period matured. At the lower level of land values many loans could not be renewed, and foreclosures increased rapidly (Fig. 28).

With the subsequent drastic decline in farm prices in 1929, farmers in debt faced another situation even worse than that just described. Reserves had been exhausted; prices were at a lower level, requiring a larger volume of product to meet fixed expenses, and credit had almost disappeared. Funds from insurance companies, the most important lender at the time, were greatly reduced by lapses and cash surrenders of policies and demands for policy loans. The Federal land banks were unable to market their bonds so as to secure loanable funds within legal rate limits, and the joint-stock land banks were in effect being liquidated. The need for liquidity had reduced real estate lending by commercial banks following 1920, and the debacle of 1929 crippled them seriously. From 1930 through 1933, 7,870 banks, mostly in agricultural areas, suspended business, causing

additional losses.[5] Individuals who normally furnish a substantial volume of mortgage credit also had less funds because of the general condition and were reluctant to lend in an unstable situation. While lenders generally extended leniency to borrowers whenever possible, foreclosures reached an extremely high peak in 1932.

The volume of short-term credit was greatly decreased through forced liquidation of loans, and the possibilities of converting short-term loans into long-term mortgage loans were almost nonexistent. Because of the serious banking situation in many areas no short-time credit was available through the usual sources; in others it was available only for selected purposes to those farmers whose credit ratings and security were still good. In some areas in Illinois many farmers were borrowing from small loan companies which at that time were permitted to lend up to $300 at 3½ per cent a month.[6]

The Way Out, 1933 to 1941. To alleviate this desperate financial situation in agriculture the Farm Credit Administration was set up in 1933. Credit from government sources had been provided earlier in emergency feed and seed loans dating from 1918, the Federal land banks organized in 1916, the Federal intermediate credit banks in 1923, and the Regional Agricultural Credit Corporation in 1932, but they were unable to cope with the critical situation. These various governmental credit institutions operating at that time were transferred to the Farm Credit Administration and the scope was greatly broadened. The country was divided into 12 farm credit districts, in each of which was established a Federal land bank, a bank for cooperatives, a Federal intermediate credit bank, and a production credit corporation.

The Federal intermediate credit banks and the banks for cooperatives did not lend to individual farmers. The former provided a source of funds to the production credit associations, while the latter, through assistance to farmers' cooperatives, helped the situation indirectly.

The production credit corporations through the local production credit associations made loans to farmers adapted to their short-term credit requirements. These organizations relieved this phase of the problem until more favorable conditions brought other lending agencies back into the field.

The Federal land banks through the national farm loan associations made real estate credit available. Several new features were provided. The Federal land banks originally set up in 1916 were greatly expanded and

[5] Norman J. Wall, Agricultural Loans of Commercial Banks, p. 22. U.S. Department of Agriculture Technical Bulletin 521, 1936.

[6] L. J. Norton, Short-term Credit. *Journal of Farm Economics*, Vol. XV, No. 2, April, 1933, p. 346.

made available to a wider range of borrowers. The long-term amortized loan providing for semiannual payments of interest and principal avoided the difficulties of paying off or renewing loans at 5-year intervals. Appraisals for these loans were made on the basis of normal agricultural value. In practice this meant the farm's ordinary physical production and sales valued at prewar (1910 to 1914) values. This normal-value concept permitted appraisals in many cases at values considerably higher than current sale values, hence facilitated refinancing of distressed loans. As emergency features, postponement of principal payments and reduction of interest rates were permitted temporarily. Finally the Land Bank Commissioner's loan was provided.

The Federal land bank loans at that time were limited to 50 per cent of the appraised value of the land plus 20 per cent of the insurable value of farm improvements. In addition an amortized commissioner's loan could be secured to expand the total of the two loans up to 75 per cent of the appraisal value. This supplementary loan was limited at first to $5,000, later expanded to $7,500. It carried a rate of 5 per cent and was secured when so used by a second mortgage on the real estate. The commissioner's loan was used also for situations which could not qualify for a Federal land bank loan, loans being made up to 75 per cent of appraised value on first-mortgage security. The refinancing made possible by the Land Bank Commissioner loans helped many farmers retain their farms and incidentally aided other lending agencies by taking over part of their distressed mortgage loans and by refinancing short-term loans on a mortgage basis. The part played by the Federal land bank and Land Bank Commissioner loans in the emergency is indicated by the fact that such loans represented 73.8 per cent of the value of all farm mortgages recorded in 1934 in the United States.[7] Almost all these loans were for refinancing loans on farms in distress.

Even this extensive help could not relieve the distressed situation of all farmers, and large numbers of farms which were refinanced by the Federal agency had to be foreclosed. The rate of foreclosures declined rapidly, however, as the mortgage loan situation was eased and the general economic situation improved. Acquisition of farms was a common experience of lenders throughout the decades of the twenties and thirties. These properties had to be improved, managed, and operated until conditions were stable enough that they could be placed on the market.

Agricultural credit for low-income families was developed as a result of the depression. It was initiated as a relief program for depression-destitute farmers who would otherwise have been on relief. This rural rehabilitation work developed in 1937 into the Farm Security Administra-

[7] Annual Report of the Farm Credit Administration, 1947–48, p. 94.

tion which provided a specialized type of farm-production credit for low-income farmers who were unable to meet the usual business-credit standards. Along with the credit this governmental agency provided supervision of farm- and home-management practices. Through its tenant-purchase program long-term amortized loans for farm ownership were made to low-income farmers who had working capital and the potential capacity to become successful owner-operators. In 1946 this agency was reorganized on a permanent basis as the Farmers Home Administration and its scope somewhat broadened. Because it operates at a lower level, it does not compete directly with other agencies providing farm credit.

From 1933 through 1941 the trend was again upward but at a rather slow pace. Prices of farm products improved, land values strengthened, commercial banks and insurance companies resumed lending on farm land. Total farm mortgage debt was declining, but more of this decline represented losses through foreclosure than repayments of principal. The rate of foreclosure was shrinking, however, and by 1941 was only about one-fourth as high as in 1932. Indebted farmers generally were on the way back, but the going was still difficult.

While the measures listed afforded much relief in the desperate farm credit situation, the general economic improvement following 1933 was, of course, the result of many forces. It was this improvement in the general situation which permitted the gradual restoration of balance not only in agriculture but in the whole economy.

The Land Boom, 1941 to 1950. The period of World War II, with its high demands for farm products, produced another land boom. As compared with the World War I land boom it started from a lower level, lasted for a longer period, and attained a higher level. From Mar. 1, 1941, to Mar. 1, 1949, land values for the country as a whole increased approximately 1 per cent a month (Fig. 28). In 1948 the level of 1920 was reached, and by early 1949 that level was exceeded by 4 per cent. Meantime the large volume of farms repossessed by lending agencies during the twenties and thirties had again gone into the hands of private owners. A downward trend in land values was initiated with the decline in prices of farm products. Despite the large number of land transfers and the rising scale of land values, total farm mortgage debt declined 25 per cent during the war period. It has increased slightly since the end of the war. This situation resulted from the rapid rate of paying off existing loans and the relatively high proportion of sales either on a cash basis or with large down payments and only moderate use of credit. In individual cases the debts acquired may prove to be burdensome. Short-term loans excluding those of the Commodity Credit Corporation on stored crops have increased only moderately during this period.

From the financial developments of the period 1910 to 1949, it is evident that the soundness of farm loans, both long-term and short-term, depends in large measure upon general economic conditions and the resulting price level. The effects of these conditions on lending agencies and the availability of mortgage credit are indicated by the ebb and flow of mortgage recordings by various types of lenders (Table 64). Although the conditions of the loan, the relative debt load of the borrower, and the policies of lenders have much to do with the possibilities of weathering a period of adverse conditions the position of the price level fundamentally determines the soundness of long-term loans.

TABLE 64. FARM MORTGAGE LOANS MADE OR MORTGAGES RECORDED BY LENDERS IN SELECTED YEARS, UNITED STATES*
(In Millions of Dollars)

Year	Loans made			Mortgages recorded				Total all lenders
	Federal land banks	Land-bank commissioner	Joint-stock land banks	Individuals	Commercial banks	Insurance companies	Other	
1912	...	.....	...	$819	$252	$144	$158	$1,373
1916	...	.....	...	942	455	235	205	1,837
1920	$67	.....	$24	2,144	663	387	345	3,630
1924	162	.....	75	770	476	346	244	2,073
1932	27	.....	2	414	263	75	122	903
1934	730	$553	†	249	131	53	104	1,820
1938	55	33	...	249	205	133	55	731
1940	56	30	...	224	222	150	73	754
1944	64	31	...	382	251	167	74	969
1948	138	1‡	...	488	470	252	82	1 ,431

* Annual Report of the Farm Credit Administration, 1947–48, p. 135. Calendar years 1912–1934; fiscal years 1938–1948. Figures rounded to nearest million.

† Placed in receivership, 1933.

‡ Discontinued July 1, 1947, except for refinancing loans previously made.

The Credit Situation in 1950. Despite the fact that both land values and the rate of transfer have risen to higher peaks than in the land boom following World War I, the general position is more sure. Agriculture as a whole is in an unusually solvent position as indicated by the volume of financial assets. In this period a higher proportion of buyers have been farmers; and a much larger proportion of transfers have been on a cash basis. Total mortgage debt is less than 60 per cent as high, and most of the debt is on an amortized basis. Credit institutions have been developed that are better suited to farmers' needs; commercial banks are protected by

Federal deposit insurance; and all lending agencies have had the recent sobering experience of working out of difficulties. Moreover farm incomes are partially guaranteed by price supports.

While these conditions provide insurance against general disaster like that which occurred in the twenties and thirties, a downward adjustment of prices of farm products can again be the cause of serious difficulties to individual farmers who are overburdened with debt and a shrinkage in the value of all kinds of farm assets whether mortgaged or clear. Financing is after all an individual problem.

Summary

The control of capital properly invested and well managed to a large extent measures a farmer's position and income. Capital may be acquired by gift or inheritance, marriage, saving, or borrowing. Borrowed capital or credit is frequently needed in the farm business for operating expenses, for securing livestock and equipment, for land purchase, and for refinancing existing debts. On the basis of the purposes served ordinary credit may be designated as production and real estate credit. Special types of credit provide for low-income farmers who cannot qualify for the usual forms.

To meet the risk hazards of lenders, borrowers should be able to present evidence of good character, favorable financial position and progress, capacity to repay, constructive use of the funds loaned, and reasonable security. The borrower in turn should look for a loan suited to his needs and ability to repay as to loan period, amount, cost, methods of repayment, and service provided.

Production credit may be secured from commercial banks, production credit associations, individuals, merchants or dealers, Commodity Credit Corporation, and finance companies. Real estate credit is provided by life insurance companies, national farm loan associations, individuals, and commercial banks. Terms vary with different agencies. Credit for low-income farmers for both production and real estate purposes is furnished by the Farmers Home Administration.

The sound use of farm credit is closely tied to present and prospective price levels. This fact was amply illustrated by the rapid expansion of credit from 1910 to the peak in 1920 and its contraction and collapse from that peak until 1933. With the development of governmental and government-sponsored credit agencies, new lending terms were devised and the credit situation was relieved although a high rate of foreclosures continued for some years but at a diminishing rate. Improvement in the general economic situation established a semblance of balance before a new land boom was initiated with the recent war period. While this land boom exceeded the previous one in many respects, basic credit conditions

in agriculture are superior to those of the earlier period. A price decline may cause difficulty in individual cases, but a credit collapse appears unlikely.

QUESTIONS

1. What is capital? Farm credit? How does credit differ from debt?
2. Why do farmers need credit? What kinds of credit do they need?
3. Will credit help all farmers in debt? For what purposes is its use justified?
4. What limitations are necessary in its use?
5. Why has American agriculture normally carried a heavy debt load?
6. Trace the relationship of this debt load to trends in the business situation since 1910.
7. What changes have taken place in this period in land prices? Debt structure? Basis of farm loans?
8. In what ways has the government aided the farm credit situation?
9. What agencies provide farm loans of various kinds?
10. What is a straight loan? An amortized loan?
11. What is a real estate mortgage? Chattel mortgage? Collateral?
12. What conditions make a farmer a good credit risk?
13. What relation do price levels have to the use of farm credit?
14. What effect, if any, do interest rates have upon the price of land?
15. What is "normal" value? How does its use affect loan values in periods of deflation? Inflation?
16. Are the credit problems which followed the land boom of 1918 to 1920 likely to be repeated following the recent land boom? Why or why not?

EXERCISE

Amortization of a farm loan. Secure from local farm credit agencies typical values for: (*a*) appraisal values per acre for land; (*b*) appraisal values for buildings; (*c*) sale prices of land.

Using amortization plans of the Farm Credit Administration or other credit agency and assumed amounts of cash for the prospective purchaser calculate amounts required for each regular payment, total payment, and total interest payment.

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Chapter 13. TAXATION AND THE FARMER

The American farmer like other citizens is kept constantly aware that he lives in a tax-ridden world. By Jan. 15 or Mar. 15 he must file an income-tax return; he receives each spring a bill for taxes on his real estate; and about Apr. 1 he is visited by the assessor who lists his personal property, both farm and household, for tax purposes. Each year he must get a license for his automobile and truck, and at longer intervals drivers' licenses for various members of the family. Even more frequently he goes to various stores to purchase farm equipment, food, or clothing, and the merchant adds an amount for tax. If he buys a watch or clock, toilet preparations, or jewelry or furs for his wife, an additional tax is added. If he buys luggage for a trip, the luggage is taxed, as is his railway ticket; should he hunt or fish, a license is necessary. If he uses tobacco or liquor or plays cards, he encounters revenue stamps. His telephone bill, telegrams, safe-deposit box, and admissions to a football game or movie each list a tax. If he buys more land, revenue stamps must be affixed to the deed; and should he be so fortunate as to inherit a considerable sum the amount is reduced by a tax on the individual estate, and he must pay another tax on the amount he receives. All these taxes he can see; they are plainly stated. Then he reads of hidden taxes—53 on a loaf of bread; 154 on a cake of soap; 201 on a gallon of gasoline; 205 on a new car; and 502 on a pair of shoes.[1] Small wonder he cannot get ahead.

He does not as yet, however, have to turn over payroll taxes for himself, and he does not have to pay a license to operate as do some kinds of business. Should he set up his business as a corporation he would find additional taxes.

Our treatment of the broad and complicated question of taxation as it affects the farmer must be limited to a brief discussion of the nature of taxes, the kinds of taxes farmers pay, what they receive in return, trends in governmental expenditures, and possibilities of tax reduction.

The Nature of Taxes

In its popular use taxes designate all payments made to government. This popular sense, however, is too broad, for there are several kinds of

[1] Tom Bernard, 502 Taxes on a Pair of Shoes. *American Magazine*, December, 1948.

payments made to government, among which taxes are by far the most important. "A tax is a compulsory contribution exacted by public authority according to some general rule, the expenditure of which presumably is for the common good without regard to particular benefits to individuals.[2] The implications of this definition will become apparent in the following discussion.

A fee or license is also paid to the government, but it differs from a tax in that it confers upon the individual a special benefit and a legal sanction. The individual is not required to pay it unless he desires the benefit. Its major purpose is for regulation rather than revenue. Thus a license for driving a motor vehicle, for hunting, or for getting married gives the individual a right not enjoyed by those without it. The cost is usually low; an exception is a license to operate a tavern in which case the high cost is expected to limit the number who operate such businesses. The cost of a motor-vehicle license is technically a fee, but it has proved to be such a good source of revenue that rates were raised to make it in reality a tax so that it now combines the idea of revenue or a tax with that of regulation. A special assessment, such as that for a drainage ditch, is also paid to government, but this also confers a special benefit and the cost is apportioned on the basis of the benefit. Still another type of payment to government is customs duties. These are paid to import articles which are subject to tariffs. As noted in the chapter on foreign trade, the primary purpose of tariffs is protection rather than revenue.

In ordinary times taxes represent almost the entire source of governmental receipts. In emergencies such as war period or depressions the amount of taxes collected is usually inadequate to meet expenditures. Governmental bodies then borrow, but the principal and interest must be paid out of future tax receipts. National governments have at times secured funds by printing paper money, usually with dire consequences.

As the major source of revenue, taxation is an essential part of the subject of public finance or the study of finances of governmental units. Public finance has much in common with financing the individual farmer, though it differs in the methods used. The farmer has a direct interest as a taxpayer. Moreover, since the funds are expended presumably for the common good and without particular benefits to individuals, he as a citizen has a broad stake in the amount that government requires, the kinds of taxes used to secure funds, and how they are expended.

Taxing Units and Branches of Government

The complexity of taxation arises in part from the large number of taxing units. In addition to the Federal government and the 48 states,

[2] Principles of Public Finance, by Merlin Harold Hunter and Harry Kenneth Allen, Harper and Brothers, New York, 1940, p. 169.

which are easily recognized, there were, in 1942, 155,067 smaller units which are collectively designated as "local." The number of local units varies greatly by states depending upon area, population, and organization. Thus in 1942 Illinois which had the largest number had 15,853 local units, while Nevada, with about twice the area but a small population, had 162 (Table 65).

TABLE 65. NUMBER OF GOVERNMENTAL UNITS, UNITED STATES, ILLINOIS, AND NEVADA, 1942*

Unit	United States	Ill.	Nev.
Federal	1		
State	48	1	1
Counties	3,035	102	17
Townships and towns	18,919	1,434	
Municipalities, urban†	3,332	208	5
Municipalities, rural	12,888	929	7
School districts	108,579	12,138	115
Special districts	8,299	1,042	18
Total	155,116	15,854	163

* The Tax Foundation, Inc., Facts and Figures on Government Finance, 1948–1949, p. 131.
† Incorporated places with more than 2,500 population.

Boundaries of local units, particularly counties, townships, or towns, and school districts, were generally laid out when roads were poor and travel slow. While fewer units would serve adequately under present conditions, changes in established units come slowly. In a number of states important changes are being effected in numbers of school districts through consolidation. In Illinois, for example, laws enabling reorganization and consolidation were passed in 1945. At that time school districts numbered 11,882. By September, 1949, the number had been reduced to 4,950, and further reduction was in process. Such changes may not reduce the cost, but they greatly improve the quality of the schools and simplify administration—two gains from a taxation standpoint.

These governmental units are all alike in one respect—their authority to levy taxes. In many states the various levies for each county and smaller units are consolidated by the county treasurer and collected by him, the funds being divided among the units. Local taxes can thus be discussed generally as composite units, and the whole range of taxes classified as Federal, state, and local.

Kinds of Taxes Farmers Pay

The tax system has expanded as the needs of government have called for increased income. As a result there has been much overlapping in kinds

of taxes by different branches of government and much confusion in terms. The abnormal demands of war periods have led to the developments of many new ways of raising revenue, so that both business concerns and individuals are subject to taxes on a multitude of things, and little attention has been given to the fairness of the total tax burden.

For most farmers the mention of taxes calls to mind those levied on income and on property, since they are relatively large. There are also many other kinds of taxes which farmers recognize as part of their tax burden. Some of these are paid at frequent intervals and some very seldom. Some classification of the taxes which farmers pay to the various units of government will help to indicate their tax load.

The following brief descriptions of kind of taxes are purposely limited to those affecting individuals, since farm businesses are chiefly of the individual type. The taxes on other forms of business are omitted from the discussion; they appear, however, in the tables as sources of tax revenues.

Federal Taxes. Payments by individuals to the Federal government include income, excise, estate, gift, and social security taxes. (Federal levies include also corporation income, excess profits, capital stock, and employment taxes which are so-called business taxes. Excise taxes are of both kinds, individual and business.)

Individual Income Tax. The individual income tax is based upon gross income after allowance for specified deductions and exemptions. The definition of income is broad, including that from all sources unless specifically exempted by the statute. Deductions are of two kinds, business and personal. Business deductions for farmers include farm-operating expenses and depreciation on equipment used in the farm business; personal deductions include contributions, interest and taxes on nonfarm items, losses, medical expenses, and the like. Certain exemptions are also provided for the taxpayer, his spouse, and dependents. Income-tax rates are graduated; *i.e.*, the rates increase with the amount of the taxable income.

The income tax has a broad base in that it applies to large numbers of persons; it is based upon ability to pay; and it is borne by the person upon whom it is levied and not shifted to others. As a producer of revenue it is subject to great variation under conditions of prosperity or depression. During the war rates were raised and exemptions lowered, resulting in the heaviest income taxation in our history. Since the war ended rates have been lowered slightly, exemptions increased, and husbands and wives permitted to split incomes on joint returns. In the fiscal year 1948 individual income taxes supplied half of the total internal revenue of the Federal government (Table 66).

Excise Taxes. An excise tax is one levied upon the production, marketing, or distribution of specified goods or services. These are of many

kinds. The most important are those on liquor and tobacco which together provide as much revenue as all the other excise taxes combined. Some excise taxes are levied on the retailer and are collected directly from the consumer; these are the so-called "luxury" taxes and include taxes on jewelry, furs, toilet preparations, and luggage. Excise taxes also apply to services, such as telephones, telegraph, safe-deposit boxes, transportation of persons and property, and various amusements. They also apply to

TABLE 66. FEDERAL-TAX COLLECTIONS BY SOURCE, FISCAL YEAR, 1948*

Source	Millions	Per cent
Taxes on business:		
Corporation income	$9,852	
Excess profits	323	
Capital stock	2	
Payroll or employment	2,381	
Total business taxes	$12,558	29.6
Individual income	$20,998	49.5
Excise:		
Liquor	2,255	
Tobacco	1,300	
Manufacturers'	1,649	
Retailers'	470	
Telephone, telegraph, radio, etc	469	
Transportation of property	336	
Transportation of persons	246	
Admissions	439	
Miscellaneous	245	
Total excise taxes	$7,409	17.5
Estate and gift	899	2.1
Total internal revenue	$41,864	98.7
Customs	422	1.0
Railroad unemployment insurance	145	0.3
Total	$42,431	100.0

* The Tax Foundation, Inc., Facts and Figures on Government Finance, 1948–1949, p. 53.

admissions, dues, and initiation fees, and include the stamp taxes which are required on transactions involving issuance and transfers of securities and legal documents, and on playing cards, steamship tickets, etc. The individual who uses the items taxed is charged with the tax, hence is aware of it. Some excise taxes are levied upon manufacturers of gasoline, lubricating oils, matches, tires and tubes; automobiles, automobile parts and accessories; radios, phonographs, records, and musical instruments; mechanical refrigerators; firearms, shells, and cartridges; electrical energy; sporting goods; electric bulbs and tubes; etc. These taxes are paid in-

directly by the consumer as part of the price of the article, and he often is not aware of them. Many of these taxes were developed during the war, and on others the rates were raised. It was expected that the end of the war would bring a reduction or elimination of most of them, but because of the demands for revenue no changes from the wartime basis had occurred up to June, 1950. In 1948 excise taxes accounted for one-sixth of total internal revenues.

Estate Tax. The Federal estate tax is levied upon the transfer of the undivided estate of a decedent, the amount of the tax varying with the value of the estate. An estate consists of all property owned at the time of death, whether money, securities, tangible personal property, or real estate. The tax is not affected by the degree of relationship or the amount received by an individual. Since the tax applies only to estates of more than $60,000, it affects relatively few farmers.

Gift Tax. The Federal gift tax was developed to deter the making of gifts to avoid estate taxes or to bring income within lower surtax brackets. It applies to transfers of property by gift to the extent that they are not supported by an adequate consideration. At the present time (1950) the tax begins when the amount of the gift exceeds $3,000 to one person in one year or when the aggregate of gifts exceeds $30,000. The estate and gift taxes in 1948 contributed slightly more than 2 per cent of internal revenue.

Social Security Tax. Beginning with 1951 social security benefits were extended to regularly employed hired workers on farms. The tax payments, made jointly by the employer and employee, provide retirement and death benefits for the employee.

State Taxes. Taxes levied by states are by no means uniform. Not only do the major sources vary from state to state, but likewise the ways in which each kind of tax is applied. Business as well as individuals bear state taxes. Business taxes in 1948 were employed by all the states in the form of payroll taxes, by 33 as corporation income taxes, and by many in some form of licenses. Business taxes provided about one-fifth of all state revenue.

The taxes upon individuals as a composite of all the states ranked as follows in order of income produced in 1948: excises, sales, motor vehicle, income, property, and death and gift taxes.

Excise Taxes. Excise taxes centered very largely upon motor fuels, alcoholic beverages, tobacco, and severance taxes. The last were used by 24 states and were applied to the extraction or output of certain natural resources. Excise taxes accounted for more than 28 per cent of state revenues.

Sales Taxes. Sales taxes employed by 29 states were of several types. Most common were taxes on retail sales, the usual rate being 2 per cent,

with some as low as 1 per cent and others as high as 3 per cent. In some states sales taxes are based upon general sales or gross receipts.

Motor-vehicle Tax. Motor-vehicle taxes together with operator's licenses while technically classified as fees produced 8 per cent of state income and amounted to more than 10 million dollars of revenue in each of 18 states in 1948.

Other Taxes. Individual income taxes were in use in 31 states. While not uniform from state to state, they generally followed the form of the Federal income tax, but exemptions are greater and the rates much lower.

Property taxes are diminishing as a source of state revenue. In 1917 they provided 45 per cent of state revenues; in 1932, only 20 per cent.[3] Fifteen states no longer levy taxes on property, though some of them are still collecting back taxes. For all states they yielded less than 4 per cent of income in 1948. Death and gift taxes furnished 2 per cent of income. Under death taxes some states follow the Federal estate tax and tax only the undivided estate; others tax inheritances only—*i.e.*, the amount left to an individual recipient. About two-thirds of the states employ both the estate and inheritance taxes under various combinations.[4] Twelve states use a gift tax with either or both of the other taxes.

Amid the extreme variations in tax systems of states it is obvious that further generalization would not greatly clear the complex picture. Much advantage would result from greater uniformity. In order to supplement this general picture, the system currently in use in Illinois is presented briefly. It is recommended that current data be compiled for any other state in which this material is being used.[5]

Sources of Illinois Revenue. The state of Illinois places its greatest reliance upon the sales tax, which in 1948 produced more than two-fifths of the tax revenues (Table 67). State income taxes are prohibited until changes can be made in the state constitution. The state does not levy a property tax. Excise taxes on motor fuel, tobacco, liquor, and horse racing brought in 31 per cent of the revenue. Motor-vehicle and operators' licenses accounted for one-twelfth of tax revenues. Inheritance taxes, based upon the amount received by the individual, were not important as a source of revenue.

[3] Francis B. Elwell, The Decline of a Tax. *Tax Outlook*, October, 1947, p. 10.

[4] Estate and Inheritance Taxes. *State Government*, Vol. XX, No. 11, November, 1947, p. 290.

[5] Sources of materials on state taxes: The Tax Foundation, Inc., New York; Statistical Abstract of the United States, U.S. Department of Commerce; Annual Reports, State Department of Finance; U.S. Department of Commerce, Bureau of the Census.

Despite their differences, tax collections in Illinois and the total for all states were similar in their proportions of tax income from excises, motor-vehicle, and death and gift taxes. Taxes paid by motorists through levies on motor vehicles and operator's licenses and motor fuel amounted to nearly a fourth of Illinois tax receipts and an even higher proportion for all states.

TABLE 67. STATE-TAX COLLECTIONS BY SOURCE, ILLINOIS AND TOTAL OF ALL STATES, FISCAL YEAR, 1948*

Source	Illinois		All states	
	Millions	Per cent	Millions	Per cent
Business taxes†	$40.2	10.5	$573	8.4
Sales	158.9	41.5	1,478	21.7
Excise:				
Motor fuel	$56.6	14.8	$1,265	18.6
Tobacco	27.4	7.2	339	5.0
Liquor and liquor licenses	24.5	6.4	503	7.4
Horse racing	9.9	2.6		
Severance	......	.....	131	1.9
Total excise	$118.4	31.0	$2,238	32.9
Motor vehicle and operator's licenses	$32.8	8.6	$625	9.2
Inheritance, estate, and gift	10.5	2.7	187	2.7
Individual income	......	.....	506	7.4
Property	......	.....	282	4.1
Other:				
Licenses	$9.9			
Income (universities and colleges)	8.9			
Interest	3.2			
Total other	$22.0	5.7	$919	13.6
	$382.8	100.0	$6,808	100.0
Nontax funds: Federal-aid and treasury-trust funds	68.9			
Grand total of Illinois receipts	$451.7			

* Illinois data from 31st Annual Report, Illinois Department of Finance, p. 26. All states from The Tax Foundation, Inc., Facts and Figures of Government Finance, 1948–1949, p. 73. Unemployment, bonus, trust, and revolving funds excluded.

† In Illinois includes public-utility, insurance, Illinois Central Railroad franchise, and corporation-franchise taxes.

Local Taxes. Local units as noted earlier are very diverse in character and include counties, townships, towns, school districts, cities, and special districts of various kinds. They are subdivisions of the states and their taxing powers are limited by state statutes. The main reliance of all these units is the property tax (Table 68).

Property Tax. The property tax consists of two parts, that upon real estate and that upon personal property. Assessment of real estate is usually made at intervals—frequently of 4 years—while personal property is listed annually. Personal property is commonly described as tangible and intangible. Tangible property consists of crops, livestock, machinery, furniture, and the like; intangibles refer to stocks, bonds, mortgages, and other forms of wealth which are easily concealed. In this respect farmers are at a disadvantage because their personal property is so largely of the tangible type, hence is readily subject to tax, while $10,000 worth of securities hidden away in a safety-deposit box may escape all property taxes. By its very nature the property tax encourages dishonesty. It may be criticized, too, as inequitable in that the ownership of property does not necessarily indicate tax-paying ability. Its administration, too, creates difficult problems.

TABLE 68. LOCAL-TAX COLLECTIONS BY SOURCE, FISCAL YEAR, 1947*
(In Millions of Dollars)

Source	Counties	Towns, townships, and special districts	School districts	Cities	Total
Property	$1,121	$417	$1,415	$2,268	$5,221
Sales and gross receipts	6	....	......	271	277
Licenses and permits	20	8	......	178	206
Individual income	......	....	......	33	33
Total	$1,147	$425	$1,415	$2,750	$5,737
Per cent from property tax	98	98	100	83	91

* The Tax Foundation, Inc., Recent Trends in Local Taxes, Project Note No. 23, p. 4.

Despite its shortcomings the property tax is still the main support for local units and in size is second only to the Federal income tax for most farmers. When the levies of the various local units are combined by the county treasurer into one bill for real estate taxes and one for personal property, farmers do not usually take the pains to break down these amounts to learn how much they are paying to each local unit or for various purposes. For many the property-tax bill remains an unsolved mystery. It need not be so. The bill for real estate tax gives the location of the property and the assessed and taxable values. The personal-property tax bill similarly gives assessed and taxable values. Many county treasurers publish annual tax-rate sheets which provide the rates levied for each purpose by each taxing unit. By applying these rates to the taxable values

the amount of tax paid to each unit and for each purpose may be ascertained.

The pressure for more revenue is bringing other kinds of taxes into use by local units. This movement is most marked by cities but is showing up also in other units. These are listed in Table 68 as sales and gross receipts, licenses and permits, and individual income. In fact they are much broader and include not only general sales taxes, but a long list of excises, taxes on motor vehicles and operators, licenses and use taxes of various kinds. A common type is parking meters, reported to have been in use in 1,500 cities in February, 1948.[6] These newer forms of taxes for local areas are additions to and not substitutions for the property tax. Those adopted by counties and towns or townships affect farmers most directly, but even those applied in cities affect their trading centers.

Hidden Taxes. From time to time much publicity has been given to "hidden taxes," the implication being that some burden is being transferred to the taxpayer without his knowledge. Some Federal excise taxes, as noted earlier, are levied on manufacturers and presumably are added to the cost of their products. The "hidden-tax" proponents go much further and assume that all taxes are passed on in the price of the product. Thus the 53 taxes said to be paid on a loaf of bread consist of 7 kinds paid by the farmer, 6 by the grain elevator, 5 by the flour mill, 11 by the railroad, 7 by the flour trucker, 7 by the manufacturer of bread wrappers, and 11 by the baker. The 502 taxes on a pair of shoes consist of 50 to 70 for each agency in producing shoes: the cattle rancher, feed-lot operator, slaughterhouse, raw-stock dealer, tannery, manufacturer, wholesaler, and retailer.

Obviously no individual or firm wishes to bear a tax that can be passed on to someone else, and a product is no more desirable because it is taxed. All taxes on business, however, are not regularly and automatically shifted to consumers. Only those which affect price can be shifted. Income, profits, and poll taxes cannot be passed on. Those taxes which affect production costs are similar to costs for labor, raw materials, transportation, and the like. They can be passed on only if the prices received for products are adequate to pay all costs including taxes. Shifting of taxes is a matter of prices, not of individual effort. The amount of shifting of a tax depends upon the relative strength of supply and demand. High prices of farm products may enable a farmer to shift a part of his business taxes, but he can never tell to what extent because it is impossible to know what prices would have been without the tax. In no case can he shift his income taxes.

Tax receipts are not compiled on the basis of occupations; hence there is no reliable measure of the total tax bill of farmers. They, together with other taxpayers, share the enormous tax load which in 1948 amounted to more than 50 billion dollars. Of this total almost 74 per cent was collected

[6] The Tax Foundation, Inc., Recent Trends in Local Taxes, 1942–1947.

by the Federal government, the remainder being divided nearly equally between the states and local units. The total and per capita tax costs in that year were as shown in the accompanying table.[7]

	Federal	State	Local	Total
Taxes collected (billions)........	$37.6	$6.8	$6.5	$50.9
Per capita....................	263.99	47.75	45.58	357.32

Total taxes collected in 1948 were a little higher than in any of the war years; somewhat less went to the Federal and more to the state and local units. The per capita cost may well cause concern and logically raises the question of what the taxpayers receive for their money.

What Do Farmers Receive for Their Tax Money?

In considering what farmers receive in return for tax expenditures it is well to revert to the latter part of the definition of taxation "the expenditure of which presumably is for the common good without regard to particular benefits to individuals." The collection of taxes is a personal matter, but the benefits which come from them are impersonal. Hence each taxpayer must look for compensation for the taxes that he pays, not to direct and personal benefits secured, but to the general benefits conferred upon all citizens. This broadens the question: What services does a government perform for its citizens? Or, to revert to the plan of breaking down the units of government, What do the Federal, state, and local units of government contribute for the benefit of their citizens?

This question can be approached by examining the kinds of expenditures made by the various branches of government. While the sources of income are few for each unit of government, the expenditures fan out in many directions and in great number. Space will permit only the broad groupings of expenditures, although these indicate very imperfectly the nature and scope of the services.

Services of the Federal Government. Postwar expenditure budgets of the Federal government are running about 40 billion dollars a year. The fiscal year 1948 is fairly typical as to amounts and distribution among the major functions (Table 69). Wars are the primary cause of big budgets. Maintaining our national defense, rehabilitation to war-damaged countries, and services and benefits to veterans amounted to 63 per cent of the total. If interest on the public debt which resulted from wars were included, the war cost would be 76 per cent of the total.

[7] The Tax Foundation, Inc., *op. cit.*, pp. 47, 48. State figures exclude unemployment compensation taxes.

Each of these functions embraces a wide area. Only those related to agriculture are expanded. The legislative programs with their supports and controls have loomed large in the public eye in recent years. Less noticed but far-reaching are the regular programs administered by the U.S. Department of Agriculture. Among these activities are the Federal experiment stations; assistance to state agricultural experiment stations; the agricultural extension service; weather-bureau reports; inspection of meats; eradication of animal diseases such as tuberculosis, hog cholera, and

TABLE 69. FEDERAL-BUDGET EXPENDITURES BY MAJOR PROGRAMS AND FUNCTIONS, FISCAL YEAR, 1948*
(In Millions of Dollars)

Major programs and functions	By programs	By functions
I. War and aftermath	$24,956	
National defense	....	$10,648
International affairs and finances	....	7,745
Veterans' services and benefits	....	6,563
II. Social programs	2,117	
Social welfare, health, and security	....	1,948
Housing and community facilities	....	96
Education and general research	....	73
III. Agriculture, business, and labor	3,502	
Agriculture and agricultural resources	....	718
Natural resources	....	1,103
Transportation and communication	....	1,269
Finance, commerce, and industry	....	315
Labor	....	97
IV. General government	1,390	1,390
V. Finance	7,520	
Interest on the public debt	....	5,211
Refunds of receipts	....	2,309
Total	$39,485	$39,485

* The Tax Foundation, Inc., Facts and Figures on Government Finance, 1948–1949, p. 20.

foot and mouth disease; and investigational work in animal husbandry and dairy husbandry. In connection with crops, investigational work covers cereal, forage, vegetable, and fruit crops, and disease control of these crops. Problems of irrigated areas are included, as well as administration and management of national forests and protection from forest fires. Studies in soils embrace maintenance work, fertility restoration, and erosion control. The control of plant diseases and removal of host plants affect all kinds of crops and all sections of the country. Preservation of wild animal life is provided for by refuges and reservations and by control of rodents and predatory animals. Of far-reaching effect also is the

enforcement of regulations on marketing, such as the Grain Standards Act, Grain Futures Act, Warehouse Act, and Packers and Stockyards Act. Market news service, market inspection of farm products, and crop and livestock statistics are put to daily use by farmers.

Services of State Governments. Public welfare, education, and highways absorb more than three-fourths of all state expenditures and an even greater proportion in Illinois (Table 70). Activities and organizations obviously vary from state to state. Those in Illinois will serve for purposes of illustration. Welfare is a broad term. Old-age assistance, aid to dependent children, blind relief, and emergency relief are handled by the Illinois Public Aid Commission. The operation of 23 mental and other state institutions comes under the Department of Public Welfare, while the Department of Public Safety operates the four penal institutions.

TABLE 70. EXPENDITURES OF STATE GOVERNMENTS, ILLINOIS, 1948 AND ALL STATES, 1947*

Expenditures	Illinois		All states	
	Millions	Per cent	Millions	Per cent
Public welfare	$109.3	25.6	$1,335	22.5
Hospitals and institutions for handicapped	48.5	11.4	402	6.8
Public safety and correction	10.9	2.5	278	4.7
Education	92.0	21.6	1,638	27.7
Highways	88.8	20.8	860	14.5
General government	49.8	11.7	234	4.0
Natural resources	4.9	1.1	206	3.5
Health	8.6	2.0	107	1.8
Other	13.9	3.3	859	14.5
Total	$426.7	100.0	$5,919	100.0
Capital outlay and interest	16.7	.....	1,010	
Total	$443.4	.....	$6,929	

* Data for Illinois from Illinois Department of Finance, 31st Annual Report, pp. 29–31. Data for all states compiled from The Tax Foundation, Inc., Facts and Figures on Government Finance, 1948–1949, pp. 27–30. Figures do not include debt retirement or trust funds.

Education includes state aid to public schools, support of state universities and teachers' colleges, vocational education, rehabilitation, etc. Highway purposes applies to construction, maintenance and policing of highways, distribution of a part of motor-fuel tax to counties and muncipalities, and reimbursements on nontaxable gasoline. Education and highways each account for about one-fifth of Illinois expenditures.

General government or control covers expenditures for legislative and judicial bodies, executive officers, departments, boards, and commissions. The departments under this heading are: agriculture, finance, insurance,

labor, mines and minerals, public health, conservation, military and naval, public works and buildings, registration and education, and revenue. Each department has many activities. The following indicate very briefly part of the broad activities of the Department of Agriculture, which in 1948 operated on a budget of more than 5 million dollars: maintenance of general office, including state aid to county fairs, 4H-club premiums, and vocational agriculture section fairs; agricultural statistics; apiary inspection; grain inspection at Chicago and East St. Louis; foods and dairies; livestock industry; markets; plant industry; poultry husbandry; seed inspection; standards; state fair; institutional farms; and serological and diagnostic laboratories.

Services of Local Government. The services performed by local units of government vary greatly as the character of the units indicates. They touch the citizen at many points in his daily life. Activities of school districts and of special districts are limited to their particular fields, although the function of education is in itself a broad area. Town or township units have a limited sphere of general activity and some expenditures for roads and other items.

TABLE 71. EXPENDITURES OF LOCAL UNITS, COUNTIES AND CITIES*

Operating expense	Counties, 1944		Cities,† 1946	
	Millions	Per cent	Millions	Per cent
General control	$268	19.4	$185	7.5
Highways	261	18.9	164	6.7
Welfare	373	27.1	206	8.4
Hospitals and health	119	8.6	189	7.7
Schools	88	6.4	486	19.7
Public safety	......	.....	532	21.6
Sanitation	......	.....	183	7.4
Other	188	13.6	213	8.6
Total operating expense	$1,297	94.0	$2,158	87.6
Capital outlays	50	3.6	168	6.8
Aid to other government units	33	2.4	10	.4
Interest	......	.....	129	5.2
Total expenditures	$1,380	100.0	$2,465	100.0

* The Tax Foundation, Inc., Facts and Figures of Government Finance, 1948–1949, pp. 43–44. Excludes debt service.

† Does not include contributions to trust funds.

County activities are much broader with welfare or relief as the leading item of cost (Table 71). Maintenance of the general county offices such as treasurer, clerk, recorder, sheriff, and county courts is second, with

highways a close third. Hospitals and health officials, schools, and other activities fall within the county range.

City governments cover an even wider area of activity with public safety and schools the leading items of cost (Table 71). General government, highways, or streets, welfare, hospitals, and sanitation are also important.

Table 72. Expenditures of Federal, State, and Local Governments for Selected Fiscal Years*
(In Millions of Dollars)

Year	Total	Federal	State	Local
1913	$2,447	$699	$375	$1,373
1923	8,003	3,055	1,320	3,628
1927	10,118	2,716	1,859	5,543
1932	12,883	4,640	2,506	5,737
1937	16,008	7,750	3,134	5,124
1938	15,407	6,765	3,409	5,213
1939	17,554	8,852	3,591	5,111
1940	17,548	9,093	3,565	4,890
1941	21,868	13,545	3,542	4,781
1942	42,247	34,050	3,673	4,524
1943	87,321	79,402	3,548	4,371
1944	103,186	95,031	3,606	4,549
1945	107,053	98,365	3,809	4,879
1946	70,392	60,378	4,457	5,557
1947	52,149	39,148	5,879	7,122
1948†	48,946	33,023	7,723	8,200
1949†	57,298	39,474	8,824	9,000

* The Tax Foundation, Inc., Facts and Figures on Government Finance, 1948–1949, p. 13. Data are exclusive of debt retirement; grants-in-aid are counted as expenditures of the first disbursing unit.

† Data for 1948 and 1949 from 1950–1951 edition, p. 52.

The services of all these units of government, Federal, state, and local, are further complicated by the fact that the different levels do not operate separately; there is much overlapping, not only in the services performed as is indicated by their expenditures, but also in the provision of funds. For example, in 1948 Illinois received 68.9 million dollars in Federal aids which helped to support welfare, highways, education, health, and other activities within the state. In a similar way the state used a fourth of its total revenue to aid local governments, chiefly for education, public welfare, and highways. Local units in turn provide a very limited amount to other local units. This overlapping of funds arises in part from taxation methods in which a larger unit such as a state collects a tax and shares the proceeds with counties and cities. It results also from the growing tend-

ency to broaden the tax base. This shift is illustrated by increased state support for schools. During the depression local sources were unable to cope with the relief problem, and greater demands were placed upon the Federal and state units.

Trends in Governmental Expenditures

The present tax load, Federal, state, and local, can be more readily understood if current rates of expenditure are compared with the trends over the past 25 years (Table 72). Total expenditures of all units in 1945, the peak year of war cost, were forty-three times as high as in 1913; and in 1947, were twenty-one times as high.

Trend in Federal Expenditures. Wars and depressions greatly expand Federal outlays, since costs for such purposes fall very largely on the national government. Before 1916 Federal expenditures averaged about 750 million dollars a year, or a little more than 2 million dollars a day. Our participation in World War I raised expenditures to a high point of 15.3 billion dollars in 1919. From 1922 through 1933, the annual cost was in the 3- to 4-billion-dollar range, or five times that of prewar. The depression boosted annual costs to 7 to 9 billion dollars for the years 1935 through 1940. World War II pushed expenditures to the extreme height of 98 billion dollars in 1945. Postwar figures remain close to the 40-billion-dollar mark, or again about five times the cost before World War II (Fig. 29). "Budgets in the 40-billion-dollar range are now 'normal.' Each great war in the nation's history has marked an apparently irreversible step to a new, greatly expanded concept of the scope of governmental activity."[8]

Tax systems are not sufficiently flexible or productive to keep pace with the extreme demands of wars and depressions; hence deficits accumulate. The war years 1917 to 1919 had deficits amounting to 24 billion dollars and raised the public debt from 1 billion dollars to 25 billion dollars. From 1920 through 1930 the receipts were greater than expenditures, and the debt was reduced by 9 billion dollars; but from 1931 through 1946 we added to the Federal debt each year. Each of the war years 1943, 1944, and 1945 added more than 50 billion dollars to the debt. In 1947 and 1948 some surplus was attained, but the fiscal year 1949 was again in the red, and the Federal debt stood at 255 billion dollars in August, 1949. The annual cost of interest on the debt at the current low rates is more than 5 billion dollars.

It is sometimes said that since we owe this debt to ourselves, it is not serious. It is more correct to say that the whole country owes the debt to a part of us. As of 1947 the debt was distributed as follows: banks, 37 per cent; mutual savings banks, 5 per cent; individuals, 25 per cent; in-

[8] Everett E. Hagen, The Federal Budget for 1950. *Current Economic Comment* (University of Illinois), Vol. II, No. 1, February, 1949, p. 40.

surance companies, 10 per cent; corporations, 9 per cent; U.S. government agencies and trust funds, 12 per cent; and state and local governments, 2 per cent.[9]

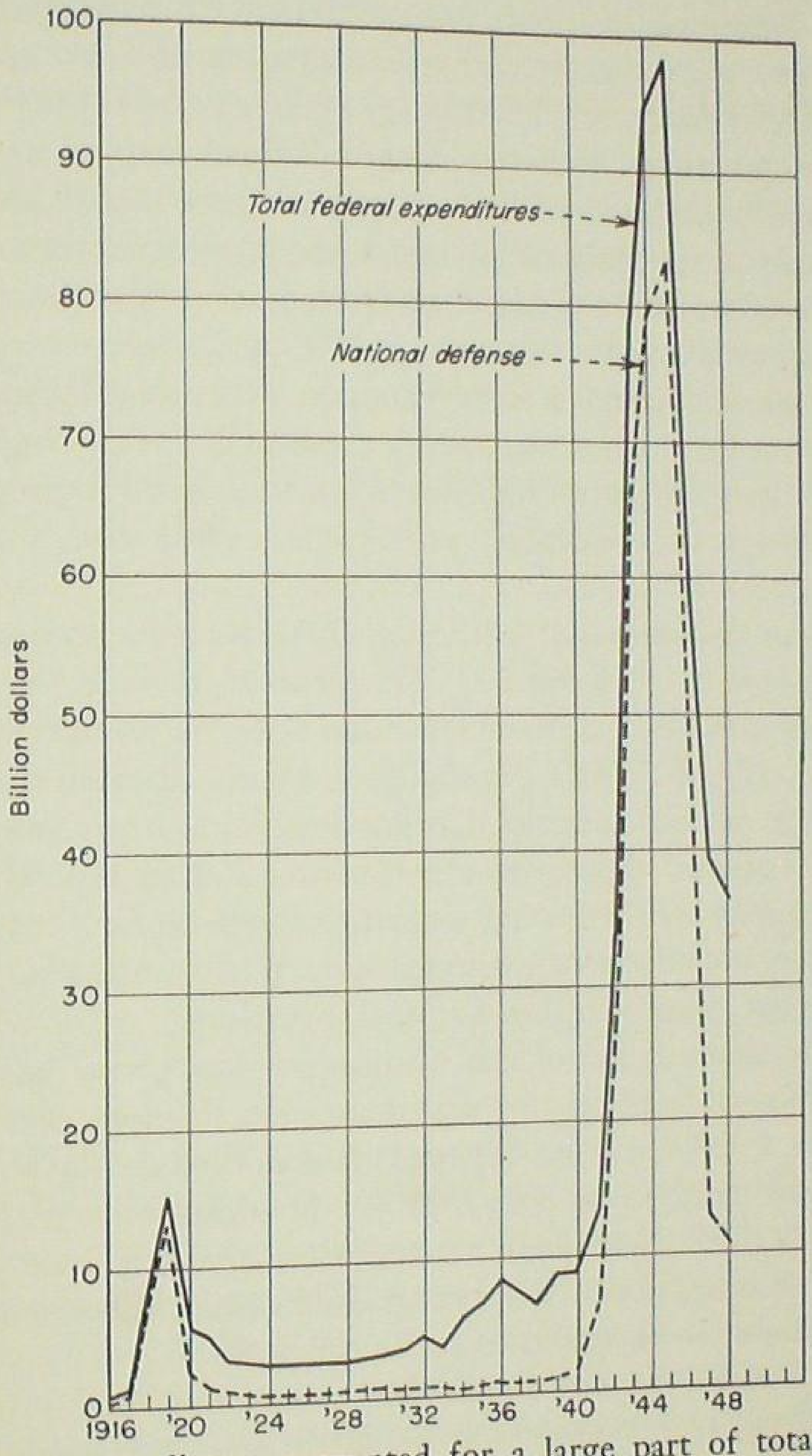

FIG. 29. War expenditures accounted for a large part of total Federal expenditures during World War II. (Based on data in Facts and Figures on Government Finance, 1948–1949, the Tax Foundation, Inc. The figures are exclusive of debt retirement, refunds, and transfers to social security trust funds.)

The war bonds bought through patriotic zeal by millions of citizens represent a part of the debt. We expect the bonds we hold to be redeemed in full at maturity. This means continued high taxes, for the budget must have a surplus if the public debt is to be reduced.

[9] *Tax Outlook*, June, 1947.

Many new obligations have been incurred since the war. Among these are the European Recovery Program and the Military Aid Program. Within the country a broad program of Federal housing has been undertaken. Many other proposals have been advanced: a broader social-security program, more public assistance and unemployment compensation, a program of health insurance, a bonus for veterans of World War II, continued high supports for farm prices, more Federal support for education, and new projects of flood control and reclamation. Many of these proposed projects, if adopted, would mean sharply increased expenditures over a period of years. No prediction is made as to the extent to which these measures will be adopted, and no attempt is made to appraise their value. They are mentioned to focus attention on the fact that government has no funds except those it takes from its citizens in taxes or borrows to be paid later through taxes. Citizens must decide through their direct votes and through their elected representatives what they are willing to pay for.

Trend in State Expenditures. State expenditures have multiplied nearly sixteen times since 1913 (Table 72). Their rate of increase has been much more uniform than Federal outlays because they are less affected by war periods. From 1939 to 1944 little change occurred because war scarcities restricted many normal activities. During this period many states accumulated sizable reserves. Since the war, however, state expenditures have risen more rapidly than income, reflecting higher price levels and the effort to resume maintenance activities temporarily suspended during the war and to meet many demands for added services.

In a considerable number of states bonus payments have been provided for World War II veterans. In nine states which made such provision prior to May 1, 1948, the total payments exceeded 1.5 billion dollars.[10] In eight of these states funds were raised by bonds or notes with maturities running up to 1972. Subsequent action has been taken or is in prospect in a number of other states. Various kinds of taxes are being used to pay the added costs of interest and to retire the debts.

Year	*Millions*	*Year*	*Millions*
1931	$127	1946	$272
1935	148	1947	389
1939	226	1948	443
1943	227		

Expenditures in Illinois have followed a similar trend as is shown by figures for selected fiscal years.[11]

[10] The Tax Foundation, Inc., Cash Bonus for Veterans, 1948.

[11] Annual Reports, Illinois Department of Finance.

Early in 1949 the state legislature approved a biennial budget (for 2 years) which exceeded a billion dollars.

Trend in Local Expenditures. Local expenditures in 1947 were only a little more than five times as large as in 1913 (Table 72). Most of the increase occurred in the first decade of this period. The reduction shown from 1927 to 1944 is misleading in that the figures show only expenditures levied by the local units. During this time an increasing amount of aid was received from states and much relief work was shifted from local to state or national units. Demand for increased services and higher costs in the postwar period have squeezed the budgets of local units which are largely dependent on the relatively inflexible property taxes and have led to the addition of other revenue measures.

TABLE 73. INDEX NUMBERS OF FARM REAL ESTATE TAXES PER ACRE FOR SELECTED YEARS, UNITED STATES AND ILLINOIS*
(1909–1913 = 100)

Year	United States	Ill.	Year	United States	Ill.
1920	244	249	1945	199	266
1925	270	289	1946	222	342
1930	277	291	1947	254	371
1935	180	199	1948	275	440
1940	183	244	1949	296	468

* Farm Real Estate Taxes in 1948. U.S. Department of Agriculture, August, 1949, mimeographed. Figures for 1949 from Agricultural Finance Review, U.S. Department of Agriculture, Vol. 13, November, 1950.

Because local expenditures, particularly in rural units, rely so largely upon property taxes, the trend in farm real estate taxes has been significant to agriculture. For the country as a whole these taxes increased nearly two and one-half times from prewar (1909 to 1913) to 1920, then increased slowly to 1930 (Table 73). By 1935 they had dropped one-third from the high point, reflecting the lower price level and the action of states in substituting other taxes for those on real estate. Since 1935 the levies have risen—rather slowly until 1945 and very rapidly thereafter. The level of 1948 was nearly equal to that of 1930. The trend by states varied greatly. In Illinois, for example, the trend was similar to that described until 1935. After that date the rate of increase was more rapid, the index in 1949 rising to 468.

Property taxes have no relation to year-to-year income. During the depression years they bore heavily on the reduced incomes. The increase since 1940 has occasioned little difficulty because of high farm incomes.

As prices of farm products adjust to a lower level the high current rates of property taxes may again prove to be burdensome.

Possibilities of Tax Reduction

The tax system, Federal, state, and local, has grown up piece by piece as governmental units encountered increased demands for services. The foregoing discussion has shown that expenditures of all governmental units have followed a sharp upward trend and that, under the prosperous conditions and high tax rates of recent years, tax receipts have been insufficient to meet the demands for services. Moreover, there is much overlapping in the kinds of taxes used at different government levels and in the services performed. As a result of these conditions taxes have become a heavy burden upon all taxpayers.

Much has been written regarding waste in government, unnecessary functions, excessive numbers of workers, the bias which results from pressure groups, and the faults of the tax system. Many constructive proposals have been made for improvement of the tax system and to provide for more equitable distribution of revenues among the various units.

The need for a reduction in the burden was clearly stated by ex-President Hoover:

> In the long run it is the average working citizen who pays by hidden and other taxes. I have made up a little table showing the number of days which this kind of citizen must work on an average to pay the taxes:

	Days' Work
Obligations from former wars	11
Defense and cold war	24
Other Federal expenditures	12
State and local expenditures	14
Total thus far	61

> But beyond this the seriously proposed further spending now in process will take another twenty days' work from Mr. and Mrs. average working citizen.
>
> Taking out holidays, Sundays, and average vacations, there are about 235 working days in the year. Therefore this total of 81 day's work a year for taxes is about one week out of every month.[12]

Fundamentally reduction in the cost of government may be achieved by a reduction in services or by greater efficiency of administration. The lower taxes which prevailed in preceding generations were possible largely because the citizens demanded fewer services from the government. The kinds of services performed by the different branches of government have

[12] Address, August 10, 1949, at Palo Alto, Calif. Reported in *The New York Times*, Aug. 11, 1949.

been indicated. If we are willing to get along without some of them, we can reduce the tax burden to that extent. The tendency, however, has been strongly in the other direction, and the feeling has prevailed that if the government performs a service no cost is involved to the individual. As a result we have demanded that the government provide more and more services that we desire, and in doing so the cost of government has mounted higher and higher.

Efficiency of administration covers a broad field. It involves among other things the reorganization and consolidation of political units to eliminate unnecessary units of government, reorganization of governmental machinery to avoid duplication and to provide the necessary services with the greatest economy and efficiency, and a revamping of the tax system to distribute equitably the cost of government with respect to the needs of the necessary units and the burden upon taxpayers.

Improvements under Way

Two notable examples pointing toward improved efficiency and economy of government are in process. One at the national level is the work of the Commission on Organization of the Executive Branch of the Government. This is popularly designated "the Hoover Commission." The other at the local level is consolidation and reorganization of the school districts in a number of states which were originally organized on the small individual-district basis.

The Hoover Commission was established by Congress in July, 1947. Its general purpose was "to promote economy, efficiency, and improved service in the transaction of the public business in the departments, bureaus, agencies, boards, commissions, offices, independent establishments, and instrumentalities of the executive branch." The Commission was organized in 22 groups or "task forces" each assigned to study a particular area and each manned by a carefully selected group of citizens familiar with the field to be covered. One of these task forces was concerned with agricultural activities. After some 18 months of effort the reports and recommendations of these groups were prepared and consolidated. A series of reports was presented to Congress early in 1949. Some of the recommendations have already been put into effect. How far the reorganization will go remains to be seen.

The greatest hindrance to governmental changes is the apathy and resistance of the people. Apathy is shown in unwillingness to become familiar with issues and by failure to vote on them. Resistance arises when individual or group interests are affected. A senator recently stated that the greatest obstacle to changes in government is the pressure of people back home who fear that their interests will be adversely affected. This was well illustrated when the Secretary of Defense, in line with a recommenda-

tion of the Hoover Commission, announced on Aug. 24, 1949, that the civilian employees of the armed forces would be reduced by 135,000, or 15 per cent. This action was calculated to save 500 million dollars a year in government costs. The following day the press recorded objections from many quarters. One senator, reflecting the attitude of his constituents, said that disposing of these jobs would create "commiseration and misery in that number of homes in the country."

The need for school reorganization on the basis of economy alone is illustrated by the situation in Illinois where changes are under way. The per capita cost for operating one-room schools during the school year 1945–1946 ranged from $378.50 in schools enrolling 1 to 4 pupils to $60.33 for those enrolling 32 or more (Table 74). Moreover the quality of instruction in very small units is inadequate to meet present-day requirements. Thus many children living on farms have had meager educational opportunities, although their parents were paying high property taxes to provide schooling. Within four years the number of school districts in the state has been reduced by nearly two-thirds as larger administrative districts have been formed to provide an adequate educational program extending through high school. This program is not yet completed. Reorganization programs of a similar character have been undertaken in at least eight other states in recent years.

TABLE 74. PER CAPITA COST IN ONE-ROOM SCHOOLS, ILLINOIS, 1945–1946*

Enrollment	Number of districts	Per capita cost	Enrollment	Number of districts	Per capita cost
1–4	173	$378.50	19–24	1,042	$81.53
5–9	1,729	184.98	25–31	461	68.44
10–13	2,066	127.91	32 and over	250	60.33
14–18	1,867	97.31	Total	7,588	

*L. W. Hinton, Cost of One Room Schools in the State of Illinois. *Educational Press Bulletin*, January-February, 1947, p. 9. Issued by State Superintendent of Public Instruction. Figures include only operating costs.

The effects of taxing policies are very complex. During the past two decades public funds have been used in an increasing degree to accomplish social and economic changes. Thus taxation is no longer limited to the sphere of raising revenue, but has become a tool for carrying out policies of public welfare, both domestic and international. It is evident that the imposition of taxes reduces the funds which the individual may spend. How governmental units spend tax funds is also important. During and since the depression public funds have been used extensively for benefit payments, subsidies, and price supports for agriculture. International programs such as the Marshall Plan incidentally provide wider market outlets.

In other ways many other groups have also benefited from the spending of governmental bodies. That this is so is evidenced by the large number of pressure groups which attempt to influence the course of legislation. Such action is most apparent at the national level but exerts an influence also in other units. These larger issues of public policy may appear to be far removed from the individual taxpayer. They are indeed closely related. The "common good," the purpose for which taxes are collected, should be considered foremost, and fundamental to that objective is the individual responsibility of the citizen and taxpayer.

Summary

In considering his tax problems the average person is inclined to emphasize the "compulsory contribution" aspect rather than that of "expenditure . . . for the common good." Thus the farmer like other citizens is called upon to help support the Federal, state, and local units of government by taxes upon wealth left to him by his forebears, the property he owns, the income he makes, almost everything he buys, with special taxes on many articles and upon his right to do many things.

He in turn, if he stops to recount, recognizes that he is the recipient of a host of services performed by government and made possible through tax contributions. Too often he takes these services for granted since they bear little direct relationship to his tax payments. Well may he question the organization of government and the equitableness of the tax system when he observes the large number of units which levy taxes, the duplication in the things taxed, and the overlapping of services by different units.

The postwar period presents a critical picture as a result of events during the past three decades. During the depression the concept of the "common good" was greatly broadened, and governmental resources were used on a broad scale for public welfare and support of the domestic economy. Two war periods have bequeathed a legacy of high taxes and a huge national debt. Services curtailed during the war are being resumed. A higher price level affects government as it does individuals. The dependence on government has increased greatly, and a host of new demands have arisen both at home and abroad. Added to this background, government at all levels has developed expensive spending habits. In spite of prosperous conditions, taxes already at a high level are insufficient to meet the demands; and it is difficult to retrench.

Improvements are being made; some receive little public notice, while others such as the work of the Hoover Commission and school reorganization make headlines. The taxpayers through their elected representatives levy the taxes and control the expenditure of funds. They therefore must assume the final responsibility of deciding what services they want and what they are willing to support.

QUESTIONS

1. What is a tax? A taxing unit?

2. What kinds of taxes does a farmer pay? What branch of government collects each kind?

3. Which kinds are paid at regular intervals and which infrequently?

4. To what agency of government (Federal, state, or local) does the average farmer pay the most tax?

5. How is this situation influenced by tenure, location of his farm, size of income, state in which he lives?

6. What services does a farmer receive from Federal, state, and local branches of government?

7. From what tax sources are Federal funds secured?

8. What are the major items of Federal expenditure?

9. From what tax sources are state funds secured in your state? For what purposes are they spent?

10. From what tax sources are funds secured in your local area? For what purposes are they spent?

11. What are "hidden" taxes? To what extent can taxes be hidden and passed on in prices?

12. Trace the trends of public expenditures over a period of years. Why are Federal, state, and local trends different?

13. In what way are tax programs related to the price level?

14. What is a "good" tax from the viewpoint of the taxpayer? From that of government?

15. Does agriculture bear too large a share of the taxes? Why or why not?

16. Who decides what taxes we have at different levels of government?

17. How may taxes be reduced? Whose job is it?

EXERCISES

1. Local taxes. Secure tax-rate sheets, published by the county treasurer, and typical real estate and personal property assessments for your area. From these data make the following calculations: (*a*) Construct local tax rates which apply to specific locations (townships, school districts, etc.) (*b*) Calculate real estate and personal property taxes. (*c*) Break down the tax bill by purposes (*i.e.*, total amount for roads, schools, etc.).

2. State taxes. Secure from the state finance department the latest annual report on state revenue receipts and expenditures. Classify (*a*) revenue receipts by kind of taxes which produce them; (*b*) expenditures by major purposes.

3. State taxes. Chart the annual expenditures by major kinds for the past 20 years.

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Chapter 14. LAND USE AND SOIL CONSERVATION

The development of the United States has depended in large part upon its natural wealth. Rich virgin soils, great stands of timber—both hardwoods and softwoods—broad expanses of grasslands, and beneath the soil rich minerals—iron, coal, oil, gas, and many more—beckoned to the pioneer. The utilization of this wealth formed the basis of agricultural and industrial development and has made possible a standard of living not matched elsewhere. Things that are abundant are used lavishly; that is an economic truism.

Carver described that period in our history from 1776 to 1833 as "the conquest of the Great Forest."[1] Well might he have called the subsequent westward movement the conquest of the prairies and of the plains. The spirit of conquest embraced by a land-hungry people was furthered by a generous land policy which made acquisition easier as settlement moved westward. Ownership in fee simple was interpreted as the right to exploit. So far and so long did this tendency extend that the appearance of a new American land policy dedicated to "the ideal of economic and social planning in land utilization" has been aptly designated by Gray as "the American Revolution of the 1930's."[2]

So successful was this revolution that not only was public attention focused upon the problems of land use and abuse, but constructive measures were initiated to retard the destruction of agricultural wealth and to make provision for the future as well as the present. This chapter is concerned with the current uses of our land area and how they came about; the effects of erosion; evidences and causes of the misuse of land; the private and public concern in the problem; remedial measures through soil conservation—land classification, practices employed, and results secured—and changes in land use needed to maintain production and to preserve the soil resources for future generations.

[1] Thomas Nixon Carver, Principles of Rural Economics. Boston: Ginn & Company, 1932.

[2] L. C. Gray, Evolution of the Land Program of the U.S. Department of Agriculture. Address Mar. 22, 1939.

How the Land Area Is Used

Of the total land area of continental United States a little more than four-fifths is used for agricultural purposes, but only three-fifths is in farms (Table 75 and Fig. 30). The production of harvested crops is ordinarily considered the highest use of agricultural land, but only a little more than one-fifth of the total land area is used to produce the nation's crops. From an area standpoint pasture is the most extensive use, occupying more than one-half of the land area. Of this pasture land roughly two-thirds is nonforested land and one-third is forested land. Forest land totals a little less than one-third of the total area, with more than half of it serving also for grazing purposes.

TABLE 75. MAJOR USES OF LAND, UNITED STATES, 1945*

Land use	Acreage (millions)	Per cent of total
Crops and pasture:		
Cropland	403	21.2
Pasture and nonforested grazing land	707	37.1
Total	1,110	58.3
Forest:		
Grazed	345	18.1
Not grazed	257	13.5
Total	602	31.6
Special use (cities, highways, railroads, etc.)	100	5.2
Miscellaneous (desert, rock, dunes, etc.)	93	4.9
Grand total	1,905	100.0
Agriculture:		
Land in farms	1,142	59.9
Nonfarm pasture and grazing land	428	22.5
Total	1,570	82.4
Nonfarm forest land not grazed	186	9.8
Total	1,756	92.1
Special land-use areas and miscellaneous	149	7.8
Grand total	1,905	100.0

* Inventory of Major Land Uses in the United States, p. 6. U.S. Department of Agriculture, Miscellaneous Publication 663, 1948.

Geographically the use of land for crops, pasture, and forest is extremely diverse because of differences in climate, topography, and soils (Fig. 31). During the recent war crop production was expanded greatly in all suitable areas. At the end of the war crops used nearly half the land in the Corn Belt and Northern plains regions, exceeding 50 per cent in five

states. One-third of the land in the Lake states was so used; roughly one-fifth in the Northeast, Appalachian, Southeast, Southern plains, and Delta regions; one-tenth in the Pacific region; and less than 6 per cent in the Mountain region. The cropland varies greatly in quality both from one region to another and also within each region.

A large part of the land not in crops is used for grazing purposes and is thus devoted entirely to livestock production. Pasture land varies greatly from the productive rotation pastures of the heaviest crop-production

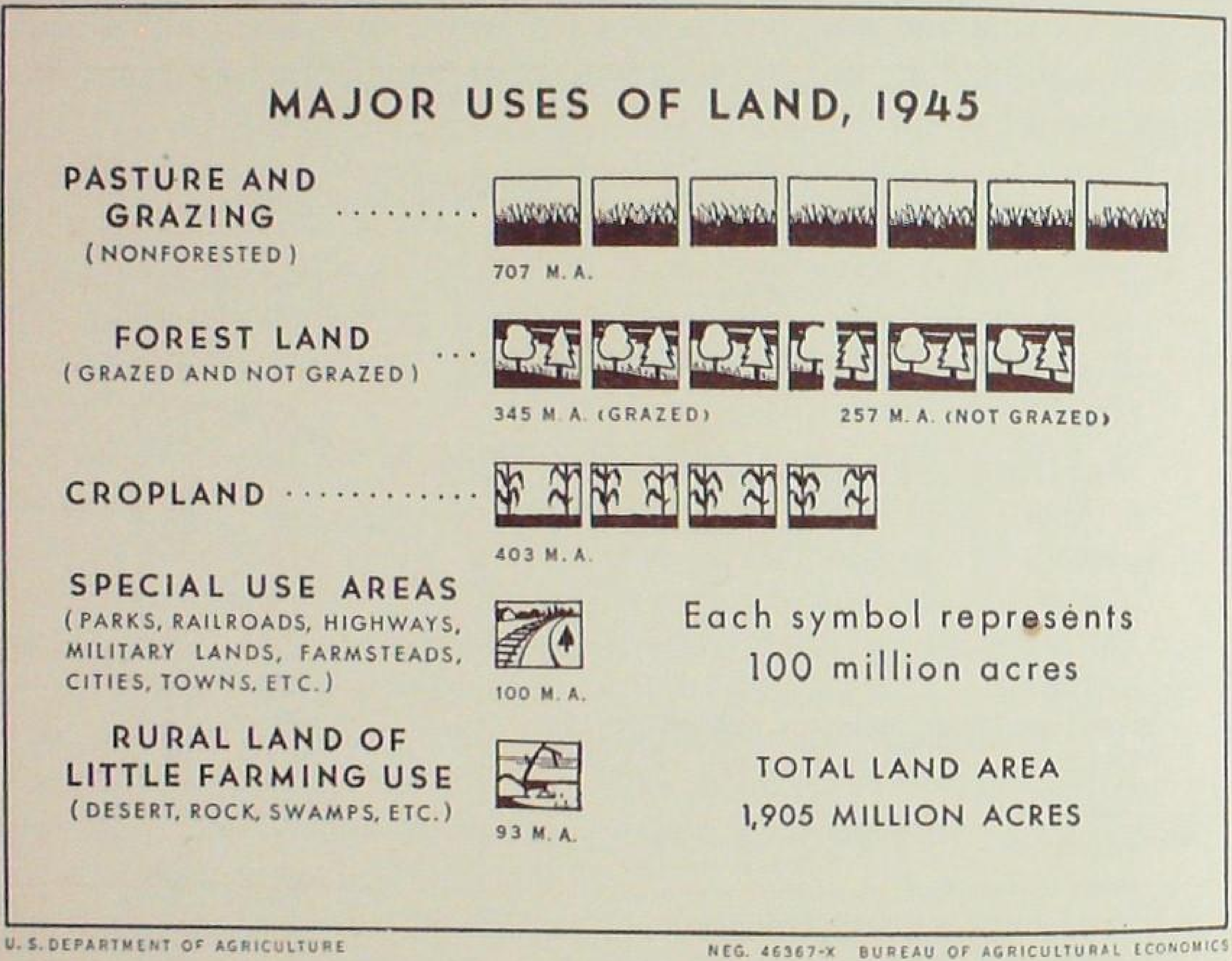

FIG. 30. Pasture use, including grazed forest land, accounts for half the land area. This emphasizes the importance of livestock. Cropland occupies one-fifth.

areas to the very sparse vegetation of the dry areas of the West. Because of these wide regional differences its carrying capacity varies widely. From an area standpoint nearly three-fourths of the pasture land is in the western half of the country. While a considerable part of this area has a limited carrying capacity, its extent added to the low proportion in crops determines the character of the agricultural production. Pasture and range land produce more than a third of the total feed requirements for livestock.

Forest areas for the most part occupy the rougher land unsuited for crop production. A little more than a third of the forest land is in the

Mountain and Pacific regions, another third in the South, and a fifth in the Northeastern and Lake states. The Corn Belt and Great Plains have only an eighth of the forest area.

Special-use areas include city sites, military lands, highways and lanes, railway rights of way, farmsteads, parks, airports, and game refuges. Miscellaneous uses include desert, rock, sand dunes, swamps, and the like.

These various land uses provide the basis for the regional areas of agricultural production as developed in earlier chapters. So far as the land in farms is concerned present land use largely reflects the combined experi-

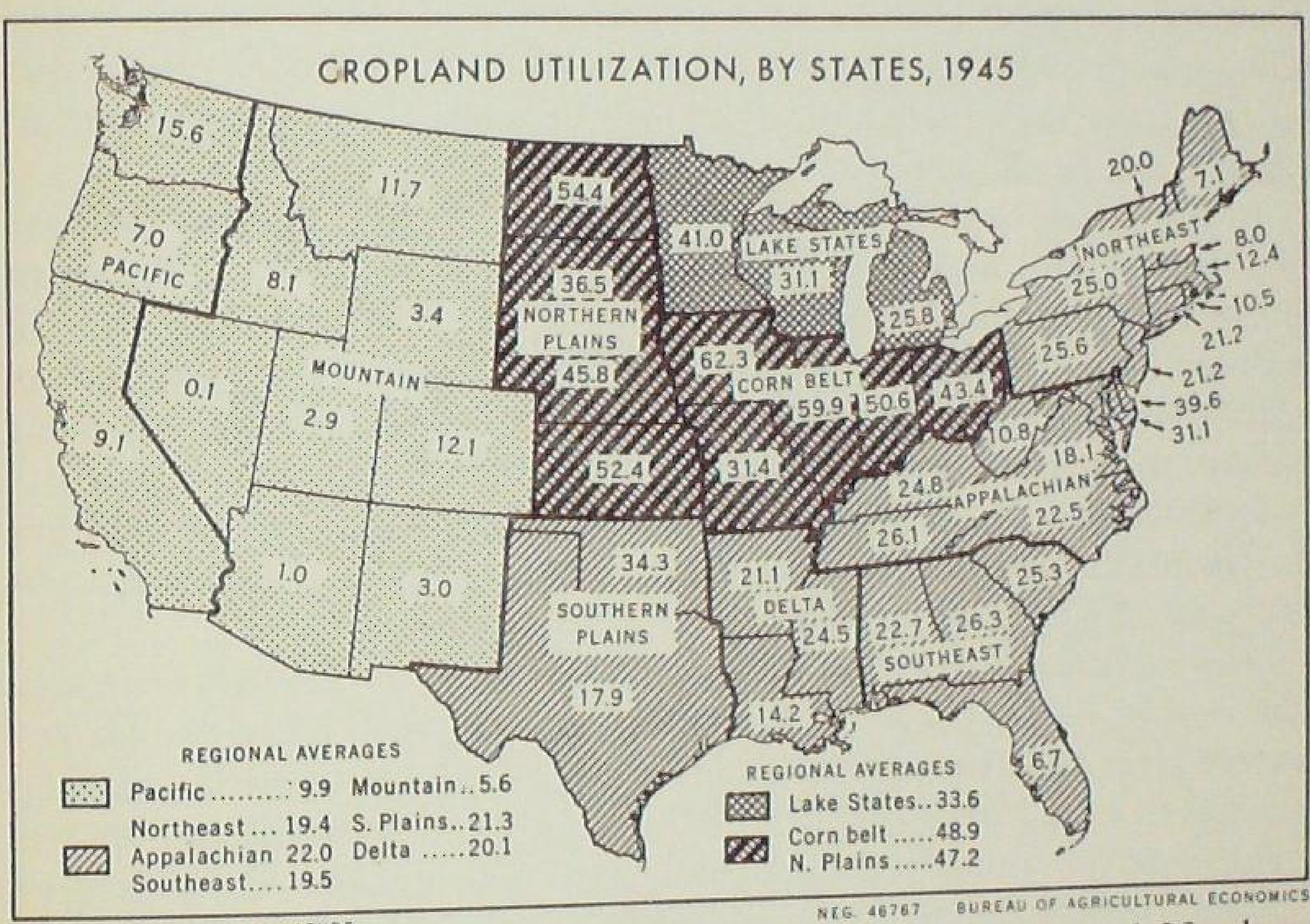

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FIG. 31. Cropland is concentrated heavily in the Corn Belt and Northern Plains areas—the breadbasket of the nation. The Mountain and Pacific areas rank low in cropland.

ence of the individual farmers who operate them. Except for that in special-use areas the land not in farms is largely in public lands of the Federal government or of the states. To a considerable degree this land is under public control.

Trends in Land Use

On the basis of its original vegetation the land area of the United States consisted of forest, grass, shrubs, and barren land. Forests covered nearly half the area; of this area three-fourths was virgin forest in the eastern half of the country, and one-fourth was virgin forest and arid

woodland in the western half (Fig. 1). The grass area occupied two-fifths of the land, tall grass east of the 100th meridian, short grass from that line to the Rocky Mountains, and smaller areas in the Mountain and Pacific regions. Shrub vegetation covered 8 per cent in the drier areas, and 5 per cent was barren. This original cover was closely related to the amount of precipitation (Fig. 32).

The story of how the land was acquired; how the major part of it was transferred to private ownership under the land policy; how these owners converted the forests, prairies, and plains into farms; and how these farms were developed into the present agricultural industry has been told in considerable detail in the early chapters and need not be repeated here. Our present interest is directed rather to some of the longer time results arising from the exploitation of the soil resources during the period of agricultural development.

In the earlier years of disposition the supply of land appeared limitless. No basis of land needs or of capability existed to guide the government in its policy or the settler in choosing his site. The land-hungry, both individuals and corporations, grabbed what seemed to have value and set about to convert the land, the timber on it, or the minerals under the surface to their own uses.

By 1880 half of the eastern forests had been cleared and the land put to other uses. The tall-grass area was largely in farms, and the range areas were rapidly shifting from public to private ownership.

The marked expansion of agriculture following 1880 greatly increased the land in farms. Up to 1920 cropland was doubled. Some decline occurred after 1920, but expansion between 1924 and 1930 carried total crop acreage to a high peak from which the trend was downward until World War II again brought a sharp expansion. The greatest shifts in crop acreages have occurred in the northern and southern plains. A great expansion in crop acreage—mostly wheat—took place in these areas from 1880 up to 1930. The dry years of the early thirties brought about a great contraction of crop acreage. Under more favorable weather conditions the crop acreage again expanded sharply during World War II. Total pasture land has declined about a fourth since 1880 as areas of land were increased for crops and miscellaneous uses. Forest land decreased about 4 per cent. These changes were a part of the agricultural development of the country.

Things that come easily appear to have little worth, and particularly if a great supply awaits the future. The eastern forest, while it provided shelter, lumber, and game, was a hindrance to be removed by heavy toil. A large part of the magnificent stand of timber was wasted. Soils were cropped heavily to be followed by exhaustion and abandonment,

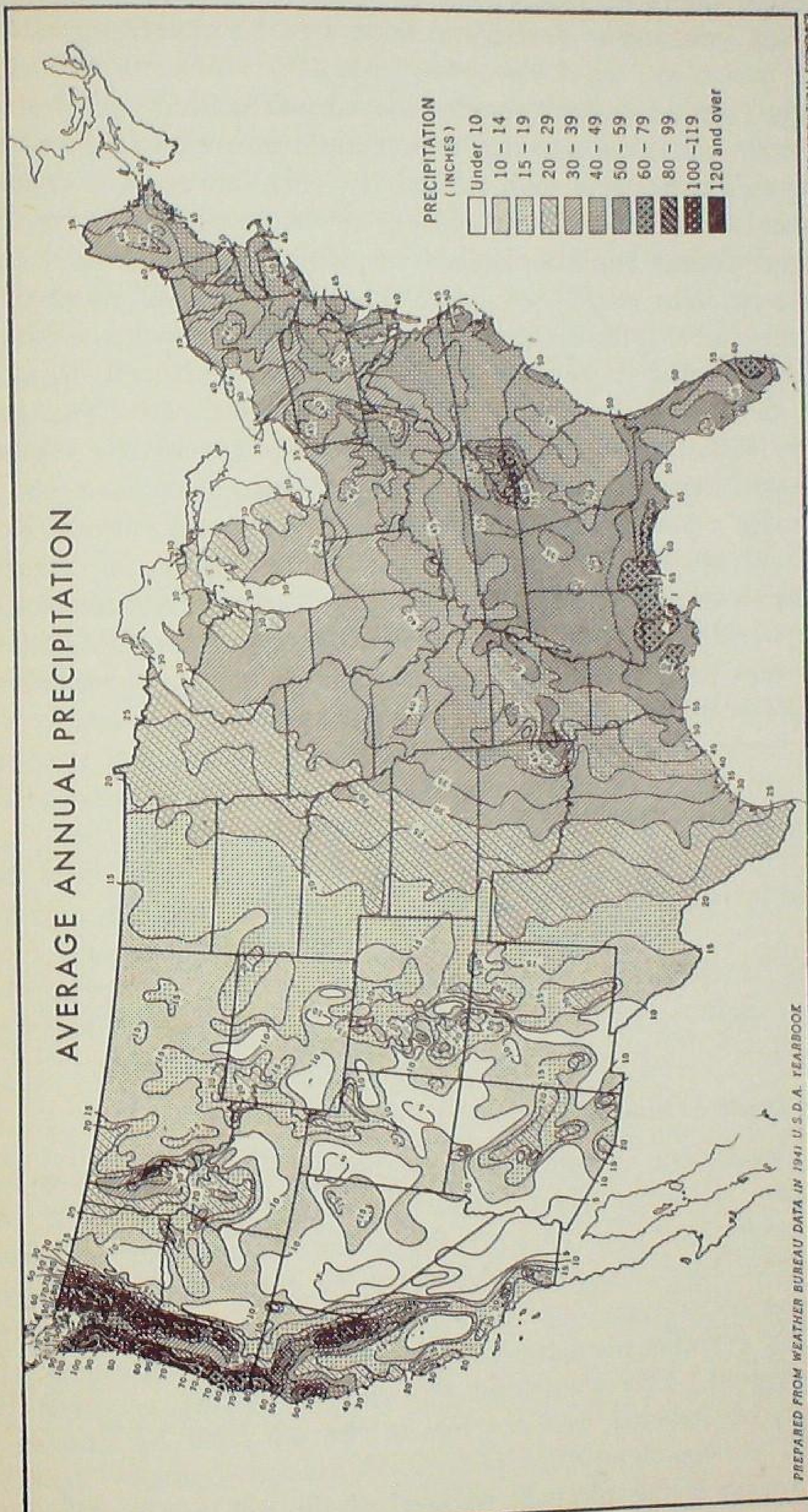

FIG. 32. Rainfall influences not only the potential uses of land, but also the need for and types of conservation measures. The eastern half of the country receives its rainfall largely from the Gulf of Mexico.

first on the thin soils of the East, and later in the South. Much land, cleared and exhausted, reverted to forest, much of it to be cleared again at a later date.

Beyond the forest, westward progress moved swiftly across the prairies. Throughout the humid eastern half of the country erosion followed the plow as the soils stripped of their natural vegetative cover were exposed to the elements. As settlement moved out upon the plains the farming methods developed in humid areas proved inadequate, and limited rainfall set boundaries to crop production. The drier areas of short grass developed into grazing range,-but the range was overstocked and the cover greatly reduced. Thus throughout the Great Plains area the stage was set for the combined results of wind and water erosion. The same general story followed settlement in the Mountain and Pacific regions.

We have seen that farm production during the period of development proceeded more rapidly than was required by the country's needs. To a considerable extent the returns represented a cashing in of nature's bounty. It was a natural process that resources should be used to provide capital for development, but the waste of those resources provided no gains at that time but seriously reduced the resources for later generations.

Two world wars, during each of which agricultural production was greatly stimulated both by high prices of farm products and patriotic motives, contributed to the drain on our soils. If one were to judge solely by the remarkable output of agricultural products during these war periods he might conclude that productive capacity is unimpaired and that the need for a more constructive land-use program has been overemphasized. A part of the greatly expanded output admittedly came from "robbing the fertility bank" through too heavy cropping. It represented, too, the cumulative effect of technological developments, described earlier, which to a degree offset the effects of earlier exploitation.

How Erosion Depletes the Soil

From the standpoint of agricultural production soils are the most important natural resource. Their formation resulted from chemical and biological activity over very long periods of time. At best they constitute a relatively thin layer, but upon this layer the entire basis of farming rests. Farming contributes directly to destruction of the soils through removal of the essential plant-food elements and by exposing soils to the effects of erosion. The plant-food elements which are removed by cropping can be restored, but the loss of the soil itself by erosion is irreplaceable.

Erosion, which is the physical removal of the soil, results from the action of water and wind. Water erosion takes place in two stages: first,

and most costly, sheet erosion, or the removal of more or less uniform layers of topsoil from the surface of the land; and second, gully erosion, or the formation of channels or gashes which are designated in different areas of the country as gullies, ditches, arroyos, coulees, or barrancas.[3] Gullies take many different shapes depending upon the contour of the land and the types of soil and subsoil strata. The extent of water erosion is affected by the amount of vegetative cover; the slope, its steepness and length; the amount of rainfall, its intensity, and the season when it occurs; the soil, its character, amount of organic matter, and the effect of its biological forms; the cultural methods used in crop production and the intensity of grazing; and the extent to which erosion has progressed since its rate of progression is cumulative.

Wind erosion is similar in many ways to sheet erosion by water. It differs in that it is most pronounced in semiarid and arid regions, but is not limited to them, and is influenced less by slope.

Under the original cover of forests and grass, erosion was negligible. As farming was expanded erosion became progressively more serious, both because of the greater areas exposed by cultivation and close grazing and the reduction in the organic matter in the soil. Even forest land when grazed closely or its ground cover destroyed by fire is subject to erosion.

Misuse of Land

Evidences of Misuse. Misuse of land may occur because land is used for purposes for which it is not suited or because, when properly used, steps necessary to maintain the soil and its productivity have been neglected. According to a comprehensive survey in 1935 more than half of the land surface of the country has been affected to some extent by erosion. A total of 282 million acres of crop and grazing land has been ruined or seriously damaged, and another 775 million acres of crop, grazing, and forest land has been affected to some degree.[4]

Erosion has been most severe on cropland. Fifty million acres, formerly used for crops, an area equal to the state of Nebraska, has been ruined by the total loss of topsoil or by gullying beyond crop use. On another 50 million acres erosion has progressed so far that the land is not worth farming. Severe damage through loss of half or more of the topsoil has occurred on 100 million acres more, while still another 100 million acres is subject to active erosion. Not more than 100 million acres of cropland is free from erosion loss if unprotected.[5] Only by adding new crop-

[3] Hugh Hammond Bennett, Elements of Soil Conservation, p. 76.

[4] *Ibid.*, p. 30.

[5] *Ibid.*, p. 29.

land by drainage, irrigation, and clearing has the total crop area been maintained at a uniform level.

Grazing land, too, has suffered. Overgrazing, particularly in the drier areas of the Great Plains and Mountain regions, has led to damage by both wind and water. Forested areas when closely grazed or burnt over are subject to more or less erosion.

Geographically no part of the country is immune. Erosion is least serious in the Northeast and Lake states where three-fifths of the land area has little or no erosion.[6] In the Corn Belt, South, and Pacific states more than half the area is subject to considerable sheet erosion and more than 45 per cent to some degree of gullying. In the 100th meridian or Plains states and the Mountain region, though rainfall is lighter than in other areas, the combined effects of wind and water have made erosion the most extensive.

The most spectacular though not the most serious evidence of erosion was the dust storms from the so-called Dust Bowl in the middle thirties. Dust storms were by no means new to the Plains states, but several years of deficient rainfall, the overextension of crop farming into the drier areas, and overgrazing of range land resulted in extensive wind erosion from 1934 to 1938 covering a belt from the Panhandle of Texas northward into Canada. So severe were the effects of wind erosion that the entire plowed surface was removed in parts of the affected area and the clouds of dust raised by some of these windstorms carried to the Atlantic Coast and out to sea.

The effects of erosion on individual farms are many. In its milder forms erosion lowers productive value through the loss of the soil itself and removal of plant-food elements and organic matter, the land becomes harder to work, and crop yields are reduced. In the more advanced stages gullies interfere with the use of machinery, and some land may become entirely useless by gullying or being buried under unproductive deposits washed down from higher land. The net effects are higher costs of operation and lower income. In time these effects, if general, affect land values and the welfare of the community by affecting the support for education, health, church, and other community activities. If widespread, erosion may eventually destroy the community or reduce it to a stage of "rural pauperism."

The damage by erosion is not limited to farm lands. The rapid runoff from unprotected lands results in extensive damage from major and minor floods. Erosion causes silting of navigable streams and harbors, reservoirs, and irrigation and drainage ditches. Highways, railways, and cities incur added costs because of erosion. Bennett estimates the annual cost of erosion at 844 million dollars, 400 million dollars as direct costs to farmers and

[6] Richard T. Ely and George S. Wehrwein, Land Economics, p. 214.

444 million dollars caused by the nonfarm damages just enumerated and by indirect costs to farmers.[7]

Causes of Misuse. Neglect of erosion loss might be excused so long as land was cheap, although its acquisition even then involved much labor rather than capital. But why should it continue when land became scarce and much higher in price? The major reason has been given as an ignorance of what was taking place until too late.[8] The rising percentage of tenancy contributed inasmuch as tenants under short leases and accustomed to frequent moves from farm to farm are unlikely to take a long-time interest in the farm; landlords too often are interested in the curent income rather than in maintaining productivity. Until recently methods of erosion control for the varied conditions were not adequately developed, nor was competent technical assistance available. Moreover, control measures involve new practices and often financial outlay. Capital for farm improvements and conservation is often lacking. New ideas take hold slowly, and new costs are likely to be avoided particularly in periods when farm prices are low and debts are burdensome. Property taxes bore heavily in the leaner years. Individualism, born of pioneer conditions and expressed in unrestricted ownership, contributed to the exploitative attitude toward land. The general instability of agriculture during most of the present century discouraged long-time programs. Because of the large number of relatively small units in agriculture any comprehensive plan must arouse the interest and secure the participation of large numbers of individuals.

Private and Public Interests in Land Use

That individual owners should have had a deeper interest in maintaining the productive value of their lands appears evident now. Some even as early as George Washington's day recognized the problem and applied such remedies of rotation and fertilizing as were known. In some areas constructive cropping plans were developed and were used extensively. But a high proportion were unaware of the silent loss or thought it a necessary condition of farming. At the time the current net income apparently outweighed the uncertain future benefits.

The nation's viewpoint is longer. A nation lasts for centuries, while the individual's span of activity is measured in decades. The aggregate

[7] *Ibid.*, p. 18.

A striking illustration of damage to a reservoir is given in "The Causes and Effects of Sedimentation in Lake Decatur," Bulletin 37, State of Illinois, Department of Registration and Education, State Water Survey Division, by Carl B. Brown, J. B. Stall, and E. E. DeTurk, 1947.

[8] Ely and Wehrwein, *op. cit.*, p. 217.

losses of farmers render the nation poorer as do the nonfarm costs enumerated. The nation should look far into the future and protect its resources against future needs for a large productive capacity, an ample food supply, and a stable tax basis. The nation, therefore, can ill afford practices which undermine its future.

Soil Conservation

The Advent of Soil Conservation. Many events have contributed to the beginnings of soil conservation, but none took hold in a broad way until the public interest and the private interest were consolidated into cooperative action. The year 1933 marked this transition, for in that year the Taylor Grazing Act was passed and the Soil Erosion Service was organized. The former applied to the remaining public domain which had been a "grazing common" open to all; through the formation of grazing districts the act provided for the leasing of public lands for grazing purposes under regulation which provided for conservation. The latter, changed to the Soil Conservation Service in 1935, provided for the organization of soil-conservation districts, established under state legislation. These districts are separate units of government, controlled and directed by groups of farmers, with technical assistance furnished by the Soil Conservation Service.

A third approach came under the AAA program. The 1933 Act simply reduced acreages of certain surplus crops. Under the 1936 Act payments were offered for shifting acreage from "soil-depleting" to "soil-conserving" crops. The 1938 Act provided for limited payments for the performance of specified conservation practices. These practices have continued year by year under subsequent acts of Congress. In 1946, 2.8 million farms were listed as participating.[9] Payments to farmers in that year amounted to 245 million dollars and applied to a wide variety of practices. While much benefit to conservation has resulted from these programs, the practices have not been coordinated to solve the problems on each farm in a comprehensive manner. Because of the way benefits are paid soil conservation and farm legislation have been tied together though many think each should be operated separately.

The Agricultural Experiment Stations, both Federal and state, and the Agricultural Extension Service have contributed greatly to the development of soil conservation. Results of research carried out in the various states and augmented by new studies undertaken cooperatively with the Soil Conservation Service have provided much of the basic information needed. The Extension Service has assisted by providing the educational background.

[9] Agricultural Statistics, 1948, p. 672.

Many other Federal agencies have cooperated, particularly in the West where the public lands are administered by more than a dozen different agencies. Three of these, the Bureau of Land Management of the Department of the Interior, the Forest Service of the Department of Agriculture, and the Office of Indian Affairs, control 87 per cent of the public lands.[10] The various agencies follow somewhat different conservation programs but, in general, operate on a district basis similar to that of the Soil Conservation Service. In this discussion districts are not differentiated by the controlling agency. Frequently two or more agencies administer different programs on the same area. National-forest areas, for example, may be used for multiple purposes, such as timber production, grazing, recreation, watershed protection, and wildlife promotion.

The various types of districts including soil conservation, grazing, and wind erosion embrace more than half the land area of the country.[11] Roughly one-fourth of the land in districts is public or other land not in farms. The districts include 69 per cent of the land in farms. This method of progression is slower but more comprehensive than that carried on under the general farm programs.

The soil-conservation districts are organized by majority vote of the farmers within the area and have rather broad powers. Through technical assistance available from the Soil Conservation Service comprehensive conservation plans are developed for each cooperating farm in the district, and these plans are applied by the farmers with technical help where needed. In the 1,963 districts organized through 1947, conservation plans had been developed for 148 million acres, or slightly less than 10 per cent of the land used for agricultural purposes.[12] Actual application of the practices indicated in the plans has been accomplished on a little more than half of that acreage.

Thus is soil conservation being applied on a multiple, though not too well-coordinated, front. The Hoover Commission has recommended a coordination of the functions of agencies involved in the conservation of soil, water, timber, range, and fish and wild-life resources. The task is a huge one and cannot be completed once for all, but must be continuously

[10] L. A. Reuss and O. O. McCracken, Federal Rural Lands, p. 19. U.S. Department of Agriculture 1947, mimeographed.

[11] Up to July 1, 1949, 2,139 districts were organized in continental United States. They embraced a total of 1,175 million acres, of which 794 million were in farms and ranches. Of these districts 2,108 were classed as soil conservation; 8 wind erosion; 22 grass conservation; and 1 irrigation. Report, Soil Conservation Districts, Soil Conservation Service, U.S. Department of Agriculture, July 1, 1949.

[12] Agricultural Statistics, 1948, pp. 680–684.

applied if these primary resources are to be used intelligently and their productive capacity is to be preserved for future generations.

The Basis of Soil Conservation. Conservation is "treating land according to its needs and using it according to its capability."[13] It consists of sound farming and ranching practices to protect the land and increase its production. A conservation program is one of soil management. It includes measures for controlling erosion, but it goes further and provides for improvement of the soil on cropland through proper rotations to increase the organic content, the application of needed minerals, and suitable tillage methods. On grazing lands it involves various measures of pasture improvement and controlled usage. As applied to the individual farm, conservation or soil management is a basic part of the broader subject of farm management.

Because of the wide range of soils and of conditions under which they are used a conservation program for a farm starts with a classification of the land and charting it on a land-capability map. All land is placed in one of eight classes ranging from the best to the poorest. The descriptions of these eight classes follow:[14]

Land suited for cultivation.

Class I. Very good land that can be cultivated safely with ordinary good farming methods. It is nearly level and easily worked. Some areas need clearing, water-management, or fertilization. Usually there is little or no erosion.

Class II. Good land that can be cultivated safely with easily applied practices. These include such measures as contouring, protective cover crops, and simple water-management operations. Common requirements are rotations and fertilization. Moderate erosion is common.

Class III. Moderately good land that can be cultivated safely with such intensive treatments as terracing and strip-cropping. Water-management is often required on flat areas. Common requirements are crop rotation, cover crops, and fertilization. Usually it is subject to moderate to severe erosion.

Land suited for limited cultivation.

Class IV. Fairly good land that is best suited to pasture and hay but can be cultivated occasionally—usually not more than 1 year in 6. In some areas, especially those of low rainfall, selected land may be cultivated more than one year if adequately protected. When plowed, careful erosion prevention practices must be used.

Land not suited to cultivation.

Class V. Land suited for grazing or forestry with slight or no limitations. It is nearly level and usually there is little or no erosion. It is too wet or stony or is otherwise not suited to cultivation. This land needs only good management.

[13] H. H. Bennett, Our American Land, p. 6. U.S. Department of Agriculture Miscellaneous Publication 596.

[14] *Ibid.*, pp. 15–16.

Class VI. Land suited for grazing or forestry with minor limitations. It is too steep, eroded, shallow, wet, or dry for cultivation. This land needs careful management.

Class VII. Land suited for grazing or forestry with major limitations. It needs extreme care to prevent erosion, or other damage. Usually it is too steep, rough, shallow, or dry to be seeded to range or pasture plants.

Class VIII. Land suited only for wild life or recreation. It is usually extremely steep, rough, stony, sandy, wet, or severely eroded.

Conservation Practices in Humid Areas.[15] When the land on a farm has been classified and mapped, the soil technician and the farmer develop a plan of land use and conservation practices needed on the entire farm. This plan is then developed by the farmer as he can, using technical assistance when needed. Bennett states that "60 major soil and water conservation practices" are being used.[16] A crop rotation is basic. Rotations are of many kinds, some good and some destructive from a conservation standpoint; the rotation should be adapted to the capability of the land. Fertilizing land, the use of cover crops, and drainage are familiar. Some other practices which are less familiar but widely used in the humid areas are briefly described.

Contouring is applied to sloping land. Farming operations, plowing, planting, cultivating, and harvesting follow around the hill on the level. The curved furrows reduce soil washing and increase water absorption by the soil.

Terracing is applied to steeper slopes than contouring. Ridges of soil, following on or nearly on contour lines, are built across the slope to catch and hold the rainfall or to divert the excess slowly to outlets so as to prevent erosion.

Strip cropping is the growing of two or more crops, with a cultivated and a close growing crop in alternate strips following contour lines. Any runoff from the cultivated strips is checked by the strips in grass, legumes, or small grain.

Water-disposal practices such as vegetative waterways and flumes (sod or masonry) serve to carry off excess water from terrace outlets and contoured fields without damage to the land. Draws which carry the runoff from adjacent land may be protected against erosion by grasses, legumes, or vines. Grass waterways are used to prevent erosion and gully formation.

Pasture improvement includes many practices to increase growth and improve quality of pastures. Among these are rotation grazing, reseeding,

[15] Adapted from Bennett, Our American Land, pp. 21–25.

[16] Report of Chief of Soil Conservation Service, U.S. Department of Agriculture, p. 50, 1948.

fertilizing and liming, weed control, grubbing out brush, and renovation of permanent pastures.

Gully control is stopping erosion in gullies. This may be done by planting grass, vines, shrubs, or trees or by mechanical means such as flumes, dams, or by diversion terraces.

Pond management consists in protection from erosion and silting and aiding production of fish and other wild life. Protection of outlets and fencing out livestock are essential.

Shelter belts and windbreaks consist of planting trees and shrubs in belts or strips to reduce snow drifting and the effects of winds. They are used to protect farmsteads, orchards, and livestock.

Erosion-control measures in humid areas are concerned largely with practices to dispose of excess water without damage to the soil.

Conservation Practices in Dry Areas. In dry areas moisture is usually the limiting factor; hence practices are designed to conserve rainfall, to prevent erosion both by wind and water, and to maintain vegetative cover or mulch. These objectives involve some of the same practices used in humid areas or variations of them, as well as measures peculiar to dry areas such as contour furrowing to hold rainfall, contour subsoiling to break up the subsoil so it will absorb more water to improve grass stands, and stubble mulching or mulching in which crop residues and protective crops are worked into the topsoil instead of plowing them under or burning them. Mulching reduces erosion, aids organic matter, and increases the water-holding capacity and bacterial growth in the soil. Where water is available either from surface sources or wells, irrigation may be applied to cropland; in such areas special measures of management are required. Grazing, wind erosion, and irrigation districts provide the means by which practices are agreed upon and regulation is provided.

The great variety of practices which are adapted to different situations attests the need for trained technicians to direct the work. In general the most productive lands need only limited protection, while those less adapted to intensive use need more protection. The lands of the different classes are by no means evenly distributed; consequently many farmers must use Class II, III, or IV land if they are to produce harvested crops. In such cases farm-conservation plans carefully applied may save the soil productivity from rapid deterioration.

Results of Soil Conservation. Soil conservation has been actively in the picture for less than two decades. Obviously that is too short a period in which to expect the checking of the neglect of a century and a half and, much less, the correction of the damage. Despite the educational efforts put forth, the technical assistance provided, and the government funds made available, there are still many farmers who follow exploitative practices oblivious of the future. But progress is being made.

On this many-sided problem no over-all measure of accomplishment is possible and particularly of the benefits which accrue to the public interest. Any measurement must be on a sampling basis and be applied to individual farm units. In practice conservation plans must meet not only the needs of the land, but also of the farm as a productive unit. Results have been measured in a number of states in the humid area of the country. The most obvious change is a departure from straight rows and square or rectangular fields inherited from the system of rectangular surveys.

Records of yields and costs present a more definite picture of the benefits to the farmers. Contour cultivation applied on various crops in 12 states resulted in increased yields of corn and soybeans by 11 per cent; small grains, 20 per cent; and milo, 27 per cent; runoff reduced on the average by one-half; and an average reduction of soil losses of 74 per cent.[17]

More detailed results under farm conditions are afforded by studies in Illinois. As an appraisal of the results from specific practices, yields of crops grown on the contour, in contour strips, or on terraced fields on the contour, when compared with yields of the same crops on the same farms but grown in the up-and-down-hill or usual field patterns, gave higher yields for the contoured crops.[18] The differences for the 7-year period 1939 to 1945 averaged 6.9 bushels per acre for corn, 2.7 bushels for soybeans, 6.9 bushels for oats, and 3.4 bushels for wheat. These increases amounted to 12 to 17 per cent of average yields.

Operating costs for labor and for power and machinery were slightly in favor of the contoured farms. Over a 4-year period, 1940 to 1943, labor costs per acre were $11.20 on the contour-tilled farms and $12.04 on those not contoured. Power and machinery costs per acre on the two groups were $7.46 and $7.82, respectively.

The effects of a complete soil-conservation plan were ascertained by comparing crop yields and net income per acre on farms which had applied conservation plans to a high degree with similar farms with little or no conservation measures (Table 76). The high-conservation farms started with some disadvantage both in yields and net income. They had an advantage in both respects for the first 5-year period, a still greater advantage during the second 5-year period, and for the last year of the 10-year period had yields 15 per cent higher than the other group and an increase of 17 per cent in net income per acre. A similar study in Wisconsin gave increased yields on farms using a high degree of conservation of 20 per

[17] J. H. Stallings, Effect of Contour Cultivation on Crop Yield, Runoff, and Erosion Losses. Soil Conservation Service, U.S. Department of Agriculture, 1945, mimeographed.

[18] E. L. Sauer, Methods of Evaluating Soil Conservation Measures. *Journal of Farm Economics*, Vol. XXXI, No. 1, February, 1949, pp. 655–656.

cent for corn, 25 per cent for hay, and 39 per cent for small grains, and a combined crop gain of 26.4 per cent.[19]

The initiation of a soil-conservation program entails outlays for soil-building materials and may require additional investment in equipment and livestock in cases in which the production is changed greatly. On 100 farms in northeastern Illinois such costs averaged $12 an acre annually for the 3-year period 1945 to 1947.[20] The annual costs were divided as follows: $1.65 for soil materials, 96 cents for buildings, $5.85 for livestock, and $3.54 for machinery and equipment. Production here was shifted largely from a grain to a livestock basis.

TABLE 76. CROP YIELDS AND NET FARM INCOME PER ACRE ON SIMILAR FARMS WITH HIGH- AND LOW-CONSERVATION APPLICATIONS, MCLEAN COUNTY, ILL., 1936–1945*

Period	20 high-conservation farms	20 low-conservation farms
Crop-yield index:†		
Av., 1936 (first year)	97	103
5-year av., 1936–1940	101	98
5-year av., 1941–1945	104	96
10-year av., 1936–1945	103	97
Av., 1945 (last year)	106	94
Net income per acre:‡		
Av., 1936 (first year)	$5.78	$6.54
5-year av., 1936–1940	9.96	7.60
5-year av., 1940–1945	23.94	19.77
10-year av., 1936–1945	17.54	14.08
Av., 1945 (last year)	27.51	22.64

* E. L. Sauer, Methods of Evaluating Soil Conservation Measures. *Journal of Farm Economics*, Vol. XXXI, No. 1, February, 1949, p. 657.

† Average yields of all crops for 40 farms equal 100.

‡ Returns for capital and management.

In the Dust Bowl areas of the Plains states where wind erosion was most severe, proper land use has likewise provided the best control for erosion. The conditions called for the development of new methods in order to level off the sand dunes and to stabilize the surface with growing plants so the land might again be made productive. The progress in control of wind erosion in this area has been summarized in the following statement:

[19] H. O. Anderson and P. E. McNall, Six Years of Soil Conservation Farming, Grant County, Wisconsin, 1939–1944. Wisconsin Agricultural Experiment Station, October, 1946, mimeographed.

[20] E. L. Sauer, Dividends From Conservation Farming. *Journal of Soil and Water Conservation*, Vol. 4, No. 1, January, 1949, p. 36.

"Approximately three-fifths of the wind erosion so far experienced in the southern plains can be controlled only by means of a proper land-use selected on the basis of land-use experience within any given locality. The mechanics of erosion control involving crop management, tillage practices, and water conservation have their limitations predisposed by the land-use decisions of land owners."[21]

Indicated Changes in Land Use

From the standpoint of conservation a number of major shifts are indicated in our present pattern of land use. Of our present crop area 45 million acres of steep and badly eroded land should be retired to permanent vegetation.[22] Another 45 million acres should be used for long-time grass-legume rotations with cultivated crops limited to one year in six. This reduction in crop area could be offset by the addition of an equal area by drainage, irrigation, clearing, and other needed improvement. Of the remaining cropland the greater part needs some treatment: 125 million acres would be improved by planting and tilling on the contour; 90 million to 100 million acres, by strip cropping; and a like acreage, by the building or improvement of terraces. On half of all the cropland, including part of that indicated as needing treatment, rotations could be improved. Of the pasture and range lands 360 million acres are subject to overgrazing or improper grazing, 110 million acres need reseeding, and 100 million acres need fertilization. These situations differ greatly in degree of urgency; the worst are critical, some are serious, while in others erosion is at a much slower rate.

The prospect of completing so broad a program quickly is tempered not only by its very size, but also by the economic position of the individual farmers. Because a conservation program involves an initial outlay and usually results in a lower income for a few years, the amount of new investment and the length of time he must wait before the higher income will repay his cost with interest are important to the farm owner.[23] It may be critical to the tenant under a short-time lease especially if the lease does not provide for repayment for his work in case he has to move before the plan has paid out. Moreover, the farmer incurs some added risk in the plan, and he is faced with the choice of whether to use his funds for con-

[21] Letter of H. H. Finnell, Research Specialist, Soil Conservation Service, Oct. 7, 1949.

[22] Report of Chief of Soil Conservation Service, pp. 16–17. U.S. Department of Agriculture, 1948.

[23] William G. Murray, Earl O. Heady, and John F. Timmons, Economic Aspects of Soil Conservation Problems. Address before Soil Conservation Society of America, Cincinnati, Ohio, Dec. 10, 1948.

servation, for some other productive use, or for consumption. The result for many farmers is likely to be an acceptance of that part of the program which promises a quick return or involves only a limited outlay and a reluctance to push the whole program to completion.

The application of conservation plans usually means a reduction in acreage of cultivated crops and an increase in hay and pasture area. Such changes involve less cash crops and more feed crops. In view of the postwar prospects of surpluses of many farm products, unless production or marketing controls are used, such shifts would aid not only in maintaining the soil, but also in a better adjustment of production to market demands. Here again the individual farmer's position is involved, for his immediate income is measured in quantities of products sold and price per unit, and he is reluctant to reduce his sales and his income even though a reduction by all farmers may mean higher prices per unit.

The desire to acquire farm land often leads to settlement on land unsuited for general farming. In some areas, notably in the cut-over regions in the Lake states, this tendency has been controlled by rural zoning ordinances set up under state laws. Such controls are helpful to the settler and the public alike in that the settler is restrained from making investments in areas hazardous for farming and the state is not required to maintain public services such as roads and schools in areas better suited for forests or other purposes. In these areas the public interest takes precedence over private interests.

This principle of making the public interest dominant has other possibilities for directing land use in rural areas in order to compel the use of control measures on badly eroded lands of noncooperators or to carry out practices which would result in general benefits but whose cost is too great for individuals to undertake. To carry out such measures would require a greater use of the police power by soil-conservation districts than they have so far cared to assume.

Summary

The increasing scale of agricultural production throughout our national history and the marked response to the increased demands of the two world war periods attest the capacity of American farms. Yet coincident with this production we have reduced our soil resources by heavy cropping, overgrazing, and erosion by water and wind. As a result a sizable area of land formerly suitable for crops has so far deteriorated as to be useless or suited only for less intensive uses, and much other crop and pasture land has been rendered less productive.

Only within the past two decades has public attention been seriously directed to this problem and the public as well as the individual character

of the problem been recognized. The problem is extremely diverse in the various parts of the country with their wide differences of soils, slope, rainfall, and land use. Research has supplied methods of erosion control and patterns of land use which together can check the damage and restore many soils which are not too far depleted.

The application of remedial measures has been haphazard to date as a result of diverse means employed by many agencies on a not too well co-ordinated basis. Even so the country has become conservation-conscious, organized districts include more than half the area of the country, and a good start has been made.

Results are difficult to measure. Sample studies indicate that conservation pays the individual farmer although it involves an initial expense and a period of waiting. The benefits to the public accrue in many ways and must be counted over a much longer span of time. The conflict between the long-time aspect of the public interest and the more immediate interest of the individual farm operator is the greatest deterrent to a more rapid application of conservation plans. This conflict is most acute with tenants whose interest in the particular farm is limited to the length of the lease and whose landlords are interested only in the immediate income.

Conservation plans widely applied would result in an improved pattern of land use through classifying land on the basis of its capability, maintain soil productivity, and aid in the long-time adjustment of production to demand.

QUESTIONS

1. How large is the land area of the United States? What proportion is used for crops? Pasture? Forest?

2. How have these proportions changed?

3. Why have we been wasteful of land resources?

4. In what ways are land resources reduced?

5. Are such losses a necessary result of carrying on farm operations? Why or why not?

6. What is soil conservation?

7. What caused the Dust Bowl of the thirties? What areas were affected? May similar conditions recur?

8. Is soil conservation an individual, local, state, regional, or national problem?

9. Whose responsibility is it to undertake conservation measures?

10. What approaches to the problem have been made through governmental activity?

11. Basically, why are different conservation practices needed in humid and in dry areas?

12. List and define practices adapted to each kind of area?

13. Can farms be kept productive without sacrificing current income?

14. What expenses are involved in applying conservation measures to farms?

15. What practical results can be expected? Does conservation pay?

16. From a long-time viewpoint, what changes should be made in land use? Are government subsidies necessary to such a program?

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Chapter 15. FARM MANAGEMENT

Agriculture, as noted earlier, is made up of a large number of relatively small units. Up to this point, however, the emphasis has been largely upon the whole of agriculture rather than upon its parts. The marked expansion during the period of settlement and the subsequent technological advances which have contributed so much to total agricultural production have been viewed as great movements rather than as an increase in the number of farm units and improvements in the manner of handling them. The demands for farm products, both domestic and foreign, the price structure, the facilities for marketing farm products and for obtaining farm supplies, credit agencies, and taxation problems have developed largely as features external to the individual farm unit. It is true that these aspects of the agricultural situation have profoundly influenced the welfare of the individual farmer, but his problem has been to adjust his business as far as possible to these outside influences rather than to attempt to shape the influences to his purposes.

The application of conservation measures, as discussed in the preceding chapter, shifted the emphasis sharply to the individual unit, for the extent to which such measures are applied is primarily under the control of the individual operator. The farm operator has many other problems, too, in deciding what is a suitable organization for his farm unit and how it should be conducted. This sphere of internal organization and the direction of the operation of the farm to secure the greatest net income consistent with conservation of its resources constitutes the field of farm management. Some analysis of these internal problems and their relation to the external influences discussed in earlier chapters form the basis of the present discussion. The treatment is limited to full-time farms operated as business units. The use of records as a guide to management is discussed in the following chapter.

The Farmers' Resources

While individual farm units are of many kinds, with few exceptions they contain certain resources or ingredients; these are land, livestock, machinery, buildings, labor, and managerial ability. The amounts and

proportions of these various resources which are included in a farm unit determine its character. Thus a large area of land, a large amount of livestock, and relatively small amounts of the other resources make up a cattle or sheep ranch. On the other extreme, a small area of land, coupled with a large amount of labor and only moderate amounts of the other resources, may represent a vegetable or fruit farm. Inasmuch as livestock, machinery, and buildings represent investments of capital, the resources are often spoken of as land, capital, labor, and management. In farm accounting the value of land may also be treated as a capital investment, and the returns from the farm may be expressed in terms of capital, labor, and management.

How Farms Differ

When we consider the wide differences in land capability as influenced by the nature and productivity of the soils, topography, rainfall, and temperature, it is evident that the kinds of farms developed in different areas must likewise show differences. To these natural differences must be added those which result from variations in the resources added by man—livestock, machinery, buildings, labor, and managerial ability. Market outlets often influence the proportions in which these resources can be combined to best advantage. The result is a great variety of farm patterns not only from one area to another, but also on a different scale from farm to farm within any farming area.

In different areas patterns have developed which are similar with respect to their major sources of income such, for example, as dairy products, cash grain, hogs, feeder cattle, or wheat. When examined more closely, however, such farms differ in total farm acreage, the acres in crops, numbers of livestock, months of labor used, and distribution of investment (Tables 77 and 78). The individual farms making up these groups would, of course, exhibit even more variety than the groups. All these groups of farms are located in the Middle Western states where farming conditions are fairly uniform. Even greater variations would be found if samples were selected from all parts of the country. This multiplicity of patterns has resulted from the efforts of individual farmers to use the varied resources at their disposal. Some have been much more successful than others. Out of these experiences numerous guiding principles have been developed regarding the acquisition of farms and the organization of their resources to provide the basis for effective business units of many kinds.

Acquiring a Farm

The first step in farming is securing control of a farm. This step is normally accomplished by one of three methods—by inheritance or gift,

rental, or purchase. It is assumed that the prospective operator has farm experience; if not he should secure experience through employment on a farm before undertaking the many problems of management. The location and characteristics of the farm determine to a considerable degree how it can best be developed. The choice of a farm is therefore very important. When a farm is acquired by inheritance or gift, the recipient usually has no choice of location, although his problems of financing may be less and he may have acquired much information about the property, particularly if he has lived upon it.

TABLE 77. NUMBER AND SIZE OF FARMS, AMOUNT OF LIVESTOCK, AND LABOR USED ON GROUPS OF FARMS OF DESIGNATED KINDS, 1937–1940*

State and region	Number of farms	Acres per farm		Amount of livestock			Number of months of labor
		Total	Crop	Cows	Pigs weaned	Hens	
Dairy:							
Ill.	17	142	79	14.0	30	103	20.0
Ind., northern	20	108	71	9.0	27	158	17.0
Iowa	6	108	70	13.0	60	122	16.0
Wis.	162	116	54	13.5	16	115	20.0
Cash grain:							
Ill.	16	220	186	4.0	19	79	18.0
Iowa	5	180	132	5.0	56	124	16.0
Nebr., eastern	15	172	152	3.0	13	102	14.2
Hog raising:							
Nebr., eastern	12	167	143	7.0	98	138	15.8
Ill.	18	128	80	4.0	136	69	16.0
Iowa	59	149	98	9.0	117	145	19.0
Ind., central	18	111	72	5.0	92	107	16.0
Cattle feeding:							
Ill.†	19	223	132	4.0	77	93	22.0
Iowa	104	243	160	7.0	140	136	25.5
Nebr., eastern	4	183	156	6.0	37	116	19.5
Wheat:							
Kans., central	10	329	264	8.1	13	114	20.2
Nebr., western	9	632	521	6.0	10	146	16.3
S.D.‡	10	992	699	10.0	20	87	17.0

* Minnesota Agricultural Experiment Station Bulletin 389, p. 10.
† Central and northern areas.
‡ North-central and northeastern areas.

The ideal of farm ownership, which is still held by a majority of farmers, developed during the period of land distribution when land could be acquired at little or no cost. At the present time ownership represents a

capital investment of considerable size, and few men can attain it except by a long period of capital accumulation. Renting a farm for a number of years is the most common way by which capital is acquired in farming. Some men prefer to continue as tenants rather than to buy a farm which often involves the hazards of liquidating a debt. Renting a farm often has distinct advantages in addition to the necessary feature of capital accumulation. For a young man it affords an opportunity to test his ability and to gain experience before investing in a unit which may be too large or too small for him. For a man going into a new area, renting gives time to

TABLE 78. AVERAGE NON-REAL ESTATE INVESTMENT PER FARM ON GROUPS OF FARMS OF DESIGNATED KINDS, 1937–1940*

State and region	Average investment per farm				
	Productive livestock	Work stock	Machinery and equipment	Feed, seed, and supplies	Total non-real estate
Dairy:					
Ill.	$1,554	$284	$1,262	$1,176	$4,276
Ind., northern	1,450	343	943	854	3,590
Iowa	1,841	261	932	1,127	4,161
Wis.	1,650	346	1,300	597	3,893
Cash grain:					
Ill.†	667	277	1,972	2,480	5,306
Iowa	1,265	229	1,131	1,741	4,366
Nebr., eastern	532	228	1,010	658	2,428
Hog raising:					
Nebr., eastern	1,574	349	1,605	969	4,497
Ill.	1,496	278	942	1,118	3,843
Iowa	1,956	357	771	1,468	4,552
Ind., central	1,478	280	1,398	1,167	4,323
Cattle feeding:					
Ill.†	3,954	358	1,906	2,405	8,623
Iowa	4,368	494	1,514	2,978	9,354
Nebr., eastern	2,350	284	2,204	1,537	6,375
Wheat:					
Kans., central	1,168	215	2,017	1,026	4,426
Nebr., western	574	85	2,091	1,358	4,108
S.D.‡	1,720	372	1,721	955	4,768

* Minnesota Agricultural Experiment Station Bulletin 389, p. 9. Values on prewar basis. In Table 62 real estate and total non-real estate values for the same groups are given on the 1945 price level.

† Central and northern areas.

‡ North-central and northeastern areas.

become acquainted with the new conditions. For the man with limited capital renting a farm of good size is often preferable to buying a small farm. When land prices are high or declining, renting until prices become stabilized may avoid an excessive investment.

The characteristics to be looked for in a farm to rent are little different from those desired in a farm to purchase. What may be done to improve a rented farm will, of course, be influenced by the length of tenure, the terms of the lease, and the degree of cooperation of the landowner. On the other hand, a mistake in selecting the farm is less serious than if the farm is purchased.

The purchase of a farm involves major decisions; not only must a host of things be considered, but most men buy a farm only once in a lifetime; hence they have only limited experience. Errors of insufficient information or of judgment are therefore frequent. Numerous score cards have been devised that are useful in calling attention to many major and minor points to be watched. Among the things to be examined closely are the total acreage and its division into cropland, pasture, timber, farmstead, and other uses; the soil—its types, productivity, and physical condition; the topography, drainage, and degree of erosion; the water supply; the condition, adequacy, and probable maintenance cost of the buildings; condition of fences; presence of noxious weeds; mineral rights; tax rates; soundness of the title; price; the immediate needs for improvements; and possible methods of financing.

Since the farm is also the home for the family, the character of the community is important. Is it adequately supplied with roads, schools, churches, and farmers' organizations? Are labor supplies and suitable markets available? What kind of neighbors does it offer? Is the community well maintained or on the downgrade? Are telephone, electricity, and mail service satisfactory?

The list of things to be checked might be extended both in length and amount of detail, but the items listed are adequate to indicate the degree of care needed. Seldom will any farm satisfy the buyer's ideal in all respects, but it is desirable that he know its weaknesses as well as its good points. The chances for success are greater if a location is chosen in an area in which many farms are similar to the general plan to be developed. Experience has proved the adaptability of such a system to the area.

Fortunately there are valuable aids available to the buyer. Among these are Census and crop reporting data for the area, soil reports, and PMA (formerly AAA) records. Reliable information can be secured, too, from the county extension agent, local bankers and elevator operators, and other farmers in the community.

Size of Farm

How large should a farm be? Size is most frequently measured in acres, though area is often an inadequate measure since a desirable size obviously varies with the kind of farming. The farm should be large enough to form an economic unit, *i.e.*, it should make full use of its resources, and provide a reasonable income. The wheat farms shown in Tables 77 and 78 represent a fairly extensive kind of farming and are much larger in acreage than the rather intensive dairy farms. The months of labor and the non-real estate capital, however, are similar for the two groups. The cash grain, hog-raising, and cattle-feeding groups are intermediate in acreage. All these groups may be designated as "family farms," the size of which is aptly described by Johnson in the following words: "A practical approach to the proper size of a full-time family farm (without reference to a specific operator) is in terms of the fixed plant (land and buildings) that can be operated by a farm family, perhaps hiring some labor in peak seasons, following the system of farming that is most profitable for the locality and using the kinds of machinery that are available for that kind of farming."[1]

Organization of the Farm

The farms for which data are given in Tables 77 and 78 were going businesses at the time when the records were secured. It is a safe assumption that each operator was endeavoring to secure the highest net income possible with the resources at his command. The kinds and proportions of resources involved in the farm setup represent the organization of the business. Whether the organization adopted in specific cases is a good or poor one would have to be measured by the results secured under actual operation; our interest here is to examine how the organization is developed.

When a farm has been acquired, the organization or reorganization of its resources involves many decisions. In making them two objectives are fundamental: the first is to secure the greatest net return from the farm as a unit, and the second, to maintain or increase its productive capacity. Moreover, there is no "best" plan. Patterns of organization which have proved successful on farms with similar characteristics often prove helpful as guides, but any plan must be fitted to the individual operator and the particular farm unit.

[1] Managing a Farm, by Sherman E. Johnson and Associates, D. Van Nostrand Company, Inc., New York, 1946, p. 62.

Land. Of the various resources, land is flexible in that more area may be added by purchase or rental or the area may be reduced by renting out or by sale. For a given tract, however, the flexibility is limited to the ways in which it may be used. The question is to decide on its best use. A start may be made on the plan by applying the land-use classifications outlined in the previous chapter. In many cases this may involve a change from previous uses or from former interior fence lines in order to provide for contour farming on cropland or for setting aside certain crop areas for permanent pasture or for forest uses.

With the crop area outlined a cropping plan or rotation should be selected. In cases where wide differences occur in soil types or topography two or more rotations may be necessary to provide for less intensive use of some areas than of others. The rotation is closely related to all other parts of the organization for it not only should be fitted to the capability of the land and the maintenance of fertility, but it largely determines the kinds and amounts of crops available for storage, feeding, or sale and the labor, power, and machinery requirements. The number of years in the rotation largely influences the number of fields.

Rotations are of many kinds, but usually consist of a combination of a cultivated crop, a small grain crop, and a grass or legume crop or combination of the two for hay, pasture, or green manure. The rotation is ordinarily built around the leading crop of the area which often occupies 2 years of the sequence, thus giving a 4-year rotation. Many combinations of adapted crops can be made, giving rotations of various lengths, the choice depending in part upon the way the products are to be used.

Livestock. Nearly all farmers keep at least enough livestock to supply family needs; many, however, depend upon livestock and livestock products as a major source of farm income. Livestock serves to increase the volume of the farm business; to convert crops into more concentrated form for marketing; to make profitable use of low-grade grains, pastures, and unsalable roughages; to utilize farm labor in seasons when field work is slack; to maintain fertility; and to make fuller use of buildings.

The feed requirements of the different classes of livestock are widely different. Hogs and poultry require large amounts of grains and little roughage. Beef cattle and sheep use large amounts of pasture and roughages and little grain until they are to be finished for market; the amount of grain is then sharply increased. Dairy cattle need ample pasture and roughage of good quality together with grain in proportion to milk production. Because feed requirements differ both with kinds of livestock and with the stage in their production, the livestock program obviously needs to be developed in close relationship to the crop-rotation and pasture areas of the farm.

The amounts of labor needed to care for livestock differ in a similar way. A dairy herd requires a large amount of labor throughout the year; hogs and poultry an intermediate amount; and for beef cattle and sheep the labor requirements are least in amount and the most seasonal in distribution. The livestock program, therefore, should be developed in relation to the available labor supply and the seasonal requirements on crops.

The shelter needs for livestock determine in part the building requirements. Dairy cattle have the most exacting requirements, particularly if fluid milk is produced for market. Hogs and poultry on the average farm require a relatively small investment in shelter, but its type is important. Beef cattle and sheep are least exacting in shelter needs.

Livestock enterprises provide a maximum of flexibility both in kinds of products marketed and in adjustments to price changes, but they require also a high degree of managerial ability. Livestock if well handled is an asset, but if poorly managed it may be a definite liability.

Farm Machinery. Machines have been devised for performing most kinds of farm work. Not only tractors, but most kinds of field machinery are available in sizes adapted to large or small areas. Many farmers consider a truck necessary for marketing products and securing supplies. On livestock farms considerable equipment may be necessary to carry on livestock enterprises in an efficient manner. Few farmers though can afford the initial investment or the overhead costs of depreciation and of operation for all kinds of farm machines and equipment which they might use. The operator must decide what machines are really necessary for the farm plan being developed. The possibility of joint ownership of machines, of employing owners of machines to do certain jobs, or of doing custom work for other farmers may settle the question regarding some larger pieces of equipment.

Machinery costs represent one of the major farm expenses. The operator with good mechanical ability and a well-equipped farm shop can materially reduce maintenance costs. Serviceable shelter when machinery is not in use reduces depreciation.

Buildings. The kinds and extent of farm buildings needed are determined by the farm production and equipment. They should provide enough space for the storage of feed and grain and shelter for livestock and machinery. Because of high construction and maintenance costs buildings should be held to minimum requirements. The internal arrangements of buildings as well as their relation to each other and to lots and pastures influence greatly the amount of labor required in caring for livestock and in performing other work about the farmstead. Frequently a major overhauling is necessary to convert barns built in horse-farming days to fit the requirements of a machine age. Often the existing buildings must be

utilized to the best possible advantage until a better suited plan can be developed and financed.

The farm dwelling deserves special consideration as the home of the farm family and the center of the business. Fortunately the general availability of electricity has made possible the use of laborsaving equipment which has greatly reduced the drudgery and improved the comfort of farm dwellings. The radio, telephone, and good roads have removed the isolation which once prevailed.

Labor. On family farms the labor supply is furnished largely by the farmer and members of his family. For additional labor supplies exchange work with neighbors or hired labor must be secured. Much farm labor requires a considerable degree of skill in connection with many kinds of jobs and a willingness to assume responsibility. Some jobs, however, are less exacting both in skill and strength, so can be performed by inexperienced help. Through such tasks as caring for poultry and other lighter jobs the farmer's children gain experience for greater responsibilities. With a limited amount of labor available it can be utilized to the best advantage if the requirements are well distributed throughout the year. Such a distribution is one objective of a careful planning of the crop and livestock enterprises. Total labor requirements are influenced also by the farm layout—the size, shape, and location of fields—and the building and lot arrangement at the farmstead, as well as by the laborsaving equipment available.

Managerial Ability. Of the farm resources managerial ability is the most difficult for the operator to appraise for he must evaluate his own abilities and weaknesses. Moreover the form of organization of the business and the success of its operation depend upon the competence of management. That men differ greatly in this respect is consistently shown by the differences in earnings on farms operated under similar conditions. The manager needs a wide fund of knowledge and good judgment, for he must decide when and how the many farm practices should be performed, how labor and equipment are to be handled, when products are to be marketed, how production should be changed in line with prospective changes in demand, when and how much new capital should be added, and when new developments should be adopted. The job is never entirely completed for conditions change requiring new adjustments.

Out of these resources, land, livestock, farm machinery, buildings, labor, and managerial ability, the farm organization is developed—the plan upon which the business is to be launched or reorganized. The plan cannot be developed piecemeal, for, as indicated, each part is closely related to all the others, and the objective is to secure a balanced unit for the whole farm. This purpose may be furthered by developing alternative plans particularly for livestock enterprises and by comparing the relative merits of

each. When once the plan has been decided the process of shifting from the previous to the new plan may extend over a considerable period. Some time obviously is necessary to work out the changes desired, especially if they are extensive, without involving unnecessary expense or disruption of production.

Operation of the Farm

Farm operation is closely related to organization; in fact, they overlap at many points, and each of these phases of management supplements the other. Operation consists of putting the over-all plan into practice, the integration of its parts in the general plan as well as in the daily work program, the application of specific practices to each enterprise or part of the business, the relation of the internal aspects of the farm to outside agencies, and the records by which the success or failure of the business is measured.

The human factor plays a leading role, for on most farms the farmer is both manager and laborer as well as owner of all or part of the resources. This triple role has the advantage of coordinating the planning and the carrying out of the plans. It has the disadvantage that many men are not equally proficient in all phases, and the management aspect may suffer because of the pressure of doing current labor tasks.

Duties of the Operator on the Farm. Since this human factor is obviously the dominant influence in all parts of the business, the nature of farm operation may be interpreted by pointing out some of the tasks which confront the farmer as an operator. All phases of the business involve some labor. The operator must therefore develop a labor schedule or program which will appraise the amount of labor needed in relation to that available; secure additional labor when necessary, determine the basis of compensation, and direct its activity; determine priority of tasks when conflicts arise; provide for quick shifts when weather halts the day's schedule; use slack seasons to have things in readiness for busy periods; train inexperienced help to do tasks within its capacity; and constantly be alert to provide safe working conditions for all workers.

The character and proportions of the crop and livestock enterprises are set up in the organization, but the development of these plans involves operation. In crop production the time of plowing, for example, should be related not only to the time of planting, but also to the general program of work, the character of the soil, and the control of erosion. What kinds of soil treatment are needed, how they are to be applied, and at what point in the rotation affect the whole cropping plan. For each crop decisions involve the use of varieties adapted to the area, the rate and time of seeding, seed treatment, tillage methods, weed control, insect control, and time and methods of harvesting.

With livestock enterprises the requirements upon the operator are even

more constant. Feeding programs need to be fitted not only to the needs of the animals in order to secure satisfactory production or gains, but also to available feed supplies and economy of production. Pasture arrangements, water supply, and use of shelter influence gains as do measures for sanitation and disease control. Breeding and feeding schedules should be timed so that animals will be ready for sale when markets are favorable. In buying feeder stock the operator decides the grade of animals suited to his conditions and the degree of finish to be given them. The requirements differ for each species and to a lesser extent for various qualities and ages of animals of the same species. Much of the daily care of livestock comes under the heading of "chores," which on a livestock or dairy farm constitute an important segment of the farm work.

Another important phase of operation concerns the use and maintenance of buildings and machinery. Closely associated with the buildings are the lots, roads, and lanes which together with the dwelling area make up the farmstead. Many of the jobs performed at the buildings are repeated day after day; hence the arrangements of buildings and lots and the planning of the work offer much opportunity for saving of time and travel. Maintenance of buildings involves repairs and painting to keep them serviceable. Putting things away and cutting weeds add to attractiveness and in the long run to profits.

With the high degree of mechanization on most family farms the operation and repair of machinery has become a highly skilled job. The care given to machinery has much to do with its length of life. Whether the prospective saving of labor will justify the purchase of a machine and when a new or improved machine should replace an old one concerns the operator. He must decide, too, the sizes and types of machines best adapted to his needs.

Relations with Outside Agencies. Operation extends beyond the fence lines and involves many relations with outside agencies. Among these buying and selling are important. Modern farming is highly commercialized, *i.e.*, it depends largely upon other businesses for much of its supplies and for a cash market for its products. Buying supplies covers a wide range of products: power units, machinery, fuel, building materials and fencing, livestock, seeds, supplemental feeds, and many minor items. For each purchase numerous questions arise—the kind of product, its quality and price; where to secure it; whether to buy independently or through a cooperative organization; and in some cases whether outside financing is desirable.

Similar problems are involved in selling his products. While the general period of marketing is closely associated with the production plans the condition of the market must be appraised from day to day to decide the

best time for selling. For storable products the farmer must decide whether to sell at harvest time, to hold them for future sale, or to put them under government seal when available. He must choose the marketing agency—whether independent or cooperative—that will give the greatest return. The answers are by no means always the same. To decide wisely the operator needs to study current and prospective market trends and to be familiar with the marketing facilities in his area.

Integrating the Business

Just as the various resources of the farm need to be carefully related to form a well-knit organization, so do the various phases of operation need to be integrated with each other and with the entire organization to make a successful business unit. The farm business is dynamic. Conditions both within the fence lines and outside change from season to season and from year to year. The manager must therefore be alert to adjustments which should be made in the organization and operation of the farm. In order to secure the maximum net income his attention needs to be directed to those phases of the business which contribute to high production, to orderly marketing in seasons when prices are favorable, and to the control of expenditures for operation and capital investment. This objective is seldom achieved by extremely high production which is likely to be costly, or by extremely low expenses which are apt to limit production, but rather by a balance of enterprises which make full and efficient use of the resources on the farm and permit a reasonable adjustment to outside conditions.

Sources of Information

The modern farmer has much help available as he undertakes the multiple problems of developing a sound organization and efficient operation of his farm. Many educational and service agencies, whose developments were traced earlier, are available to give him assistance. The state agricultural experiment stations carry on studies relating to all phases of farm production. The results are available through publications and through the activities of county agricultural agents. Farm journals carry timely information, and marketing and financing agencies may assist with problems in their fields. The provisions of governmental programs are available through PMA offices. Economic information is published by the extension services of many agricultural colleges on a monthly and sometimes on a weekly basis, and also by the U.S. Department of Agriculture in the pamphlet *The Agricultural Situation* published monthly on a subscription basis.

Systems and Types of Farming

The foregoing discussion indicates that the organization of each farm unit presents an individual problem. The patterns which emerge are seldom identical, but their similarities are often more marked than their differences. While farms may be classified in many ways, the most common basis is that of the principal product or products sold. Thus farms which differ greatly in area and in crops grown but which are alike in securing most of their income from hogs would be classified as hog farms. In contrast, of three farms of similar area and growing similar acreages

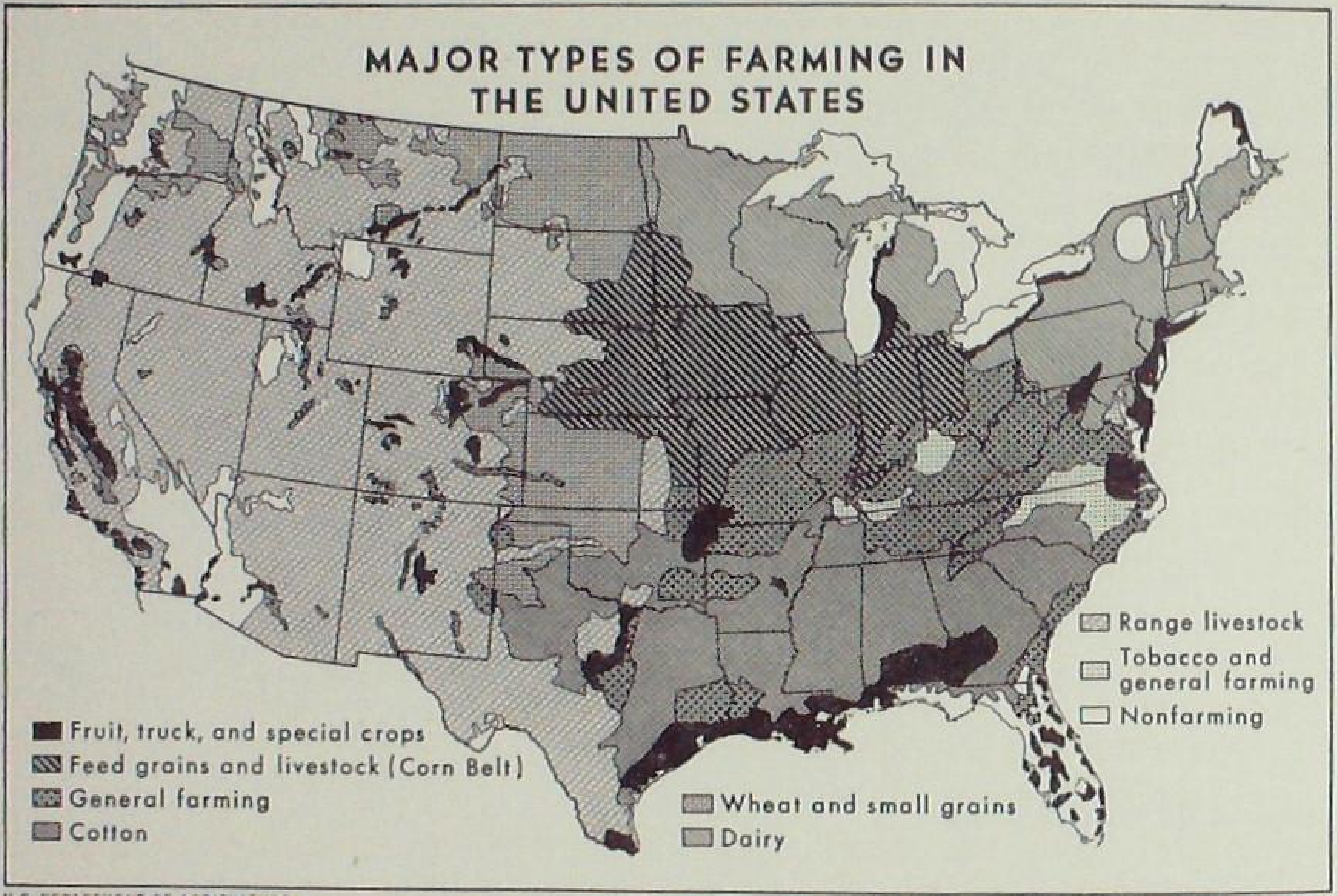

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FIG. 33. Conditions of climate, soils, topography, and markets largely determine the major types of farming. Each of these major types contains many minor variations.

of crops, one on which crops are marketed directly is classified as a grain farm; another on which they are fed to hogs is a hog farm; while the third, on which they are fed to beef cattle, is a beef-cattle farm. More detailed classifications may be made within each group based upon the methods or practices used. Such designations for individual farms are termed systems of farming.[2]

An area in which many farms have a general similarity in size, products sold, and methods followed is called a type of farming (Fig. 33). It is apparent that the number of types of farming depends upon how minutely

[2] Johnson and Associates, *op. cit.*, p. 27.

each type is described. In most, if not in all states, the major farming-type areas have been delineated on a more detailed geographic basis. These areas vary in number from 4 in Virginia and 5 in Iowa to 20 in Missouri and 25 in Pennsylvania.[3] Even more detailed areas, totaling about 900 for the entire country, have been mapped.[4] This large number of types of farming serves to emphasize both the similarities and differences in farms.

TABLE 79. NUMBER AND PER CENT DISTRIBUTION OF FARMS BY TYPE OF FARM, UNITED STATES, 1945*

Type of farm	Number of farms (thousands)	Per cent
Farms with no products sold or used	98.7	1.7
Farms, unclassified	7.6	0.1
Farms producing products primarily for own household use	1,289.2	22.0
Farms producing products primarily for sale	4,463.7	76.2
Fruit and nut farms	133.6	2.3
Vegetable farms	92.2	1.6
Horticultural specialty farms	16.0	0.3
All-other-crop farms (field crops)	1,862.6	31.7
Dairy farms	558.6	9.5
Poultry farms	274.5	4.7
Livestock farms	806.3	13.8
Forest-products farms	29.0	0.5
General farms	690.9	11.8
All farms	5,859.2	100.0

* U.S. Census, 1945.

A slightly different classification of farms by types of farming appears in the U.S. Census of Agriculture. In this classification the basis is products for sale or use without reference to geographic location. Thus in the Census of 1945, after eliminating farms with no products and some which could not be classified, the remainder were classified into 10 groups, one including farms producing products primarily for own household use, 8 based upon a single source of income which exceeded 50 per cent of the total value of products sold, and one general group in which no single source amounted to as much as 50 per cent of all products sold (Table 79).

The Census definition of a farm includes many small, part-time, and self-sufficient farms.[5] Thus nearly a fourth of the farms produced no

[3] M. H. Overton and L. S. Robertson, Farm Management and Marketing, pp. 89–116.

[4] Johnson and Associates, *op. cit.*, p. 28. Generalized Types of Farming in the United States, 1949. U.S. Government Printing Office.

[5] See Chap. 5.

products or primarily for their own household use. When farms are arranged by economic classes (Table 18), the proportion with limited production is even larger, for 43 per cent of the least productive of the farms produced in 1944 only 5 per cent of the total products sold. Such units which produce primarily for their own households or whose production is very limited usually represent limited resources and therefore offer less opportunities for management since their objectives are not based upon market production with full use of balanced resources.

Three-fourths of the farms classified in the Census produced products primarily for sale. Of these field crop, livestock, general, and dairy farms made up a large proportion. The remainder were largely specialty farms of various kinds. While some farms in these groups are quite small and a few are very large, the larger proportion are the typical American family farms.

Summary

Farm management consists of the organization and operation of a farm to secure the greatest net income consistent with the conservation of its resources. The organization, or internal structure, is concerned with the proportions of the resources, land, livestock, machinery, buildings, labor, and managerial ability which go into the make-up of the business. These resources, often classified as land, capital, labor, and management, are all variable; hence many possible patterns might be devised. The selection of a particular farm, whether acquired by inheritance or gift, rental, or purchase, narrows the range of possibilities, for in practice some of these resources are nearly always limited in amount or quality, or both. The problem of organizing the farm unit, therefore, is that of making the best possible combination of the resources available to the farmer.

Farm operation, the second phase of management, consists of putting the organization plan into practice and the conduct of the business with respect to both its internal relationships and dealing with outside agencies. The farm business is dynamic in nature; hence its plan of operation and organization should possess a measure of flexibility to provide for needed adjustments in the day-to-day schedule or in the longer run plans. The demands upon the farmer in his triple role of manager, laborer, and owner of all or part of the resources are very diverse. He has, however, many sources of information available which enable him to apply the results of research and the experiences of other farmers.

While farms are seldom identical in all their resources, similarities in certain respects are common. The kind of major product sold forms a practical basis of classifying individual farms into systems of farming, while the occurrence of many farms of a similar kind in an area constitutes

a farming type. These larger groupings of systems and types of farming are useful in the study of farm management in that they provide the means for a broader analysis and a more general application of the basic principles of management to larger numbers of individual farm units.

QUESTIONS

1. What resources are necessary for a farm business?
2. What kinds of patterns result when resources are combined in different ways?
3. How may one acquire a farm?
4. For a man with limited capital, what is the best way to get started in farming?
5. What effect do price levels have upon the time and manner of starting to farm?
6. What conditions limit the maximum and minimum sizes of farms from an operating standpoint?
7. What is meant by farm management?
8. Differentiate between farm organization and farm operation.
9. What different roles does the farmer have with respect to his business?
10. In planning the organization of a farm, what resources are most fully under control of the farmer?
11. List the various kinds of jobs that fall to the farm operator.
12. What conditions call for adjustments in the farm plans?
13. From what sources may a farmer keep informed?
14. Should a farmer undertake experiments on his farm? Why or why not?
15. Differentiate between systems and types of farming.
16. What gives rise to systems of farming? To farming-type areas?

EXERCISES

1. Outline and label the farming-type areas in your state as developed by the College of Agriculture or as shown on map of Generalized Types of Farming in the United States, published by the Bureau of Agricultural Economics, U.S. Department of Agriculture (0–836861), 1949.
2. Select a typical county in each of two farming-type areas in your state. For each county reduce pertinent census data on farm acreages and crop and livestock production to a per-farm basis. Compare these per-farm figures.
3. Measure a farm and draw a map to scale to show field and farmstead arrangement. Label fields and buildings.

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Chapter 16. FARM RECORDS AND THEIR USE

The farm business needs adequate records just as does any other type of business. The total investment in the business may easily amount to $50,000. It is not unusual on the highest value lands for it to even double this figure. Often many different products are grown; they are disposed of in various ways; and many financial transactions of buying and selling take place. Records are necessary not only to keep track of all these items, but also to obtain information to guide the management of the business. Few farmers have had training in the technical forms of accounting commonly used in other lines of business, and the farm business is seldom large enough to justify the employment of a bookkeeper or accountant. These conditions limit both the time that can be given to record keeping and the character of records which can be used.

Purposes of Records

Records are not an end in themselves but the means of attaining certain ends. The extent to which these ends are served will, of course, depend upon the scope and accuracy of the records kept. To serve the farmer's needs adequately records should provide the basis for five uses.

1. They should provide a history of the farm in operation. How the farm's resources are being used, the amount of capital invested in different parts of the business, how the crop area is divided among the various crops, the scope of the productive enterprises, the amounts of physical production, the financial transactions of buying and selling with the prices paid and received, and finally the earnings as they are made year by year—all these make up the history and provide the basis for the other purposes.

2. They should serve as a measure of earnings of the farm as a unit. An over-all measure affords a general appraisal of how well the various resources are combined into a business unit. The reasons accounting for this position must be sought in a more detailed evaluation of the various parts of the business.

3. They should provide the basis for evaluating the organization of the farm. Even though the organization has been well worked out, adjustments will be needed from time to time. Enterprises may not work out as

planned, changes in the relative prices of farm products, the application of governmental regulations or the use of soil-conservation measures may call for either short-time or long-time adjustments in the setup of the business.

4. They should provide a guide for farm operation. Whether the work program is giving satisfactory results day by day and season by season, whether the yields of crops and the production and gains of livestock are up to reasonable standards, whether gross receipts measure up to expectations and expenses are kept in proper relationship with receipts, all affect the degree of success of the business.

5. They should provide the basis for income-tax returns. Under existing laws all farmers on family-size farms must file returns for Federal income tax. Many states also use income taxes and require similar returns. While income-tax returns may be filed by using less information than is needed for management purposes, the information needed for the manager serves both ends.

Distinction between the Farm Business and Personal Items

In few other lines of activity are the business and home or personal aspects of the operator so closely related as in farming. The farm home serves as the center of the business; often all members of the family help carry on the farm work; part of the farm production is used for food for the family or the hired help, and farm products are frequently exchanged for purchased foods. Some items of expense, such as those for the telephone, electricity, and the automobile, usually are jointly business and personal. For both management and income-tax purposes a clear distinction needs to be drawn. The manager can then study the business results unhampered by the personal habits of the family; for income-tax purposes business expenses are deductible while personal items are not.

Kinds of Records

Several kinds of records are in use on farms. Each has some merit, but they differ greatly in the extent to which they fulfill the foregoing purposes. Kinds of records used include an inventory and net worth statement, record of cash receipts and expenses, the single-entry record commonly called farm records or farm accounts, and complete cost or double-entry records.

Inventory and Net Worth Statement. The inventory and net worth statement is usually recorded at the beginning and end of the accounting year and ordinarily covers the calendar year. As usually kept by the individual farmer such a statement includes both business and personal items. It may be set up to include the farm business only. It consists of three

parts: assets, liabilities, and net worth. The assets are usually classified as to how quickly they could be liquidated if necessary, and the liabilities as to time of payment or the type of security pledged for them. A financial statement of this type is shown. It includes both business and personal items (Form 1).

Form 1. Financial Statement (January 1 and December 31, 19..)*

Assets	Jan. 1	Dec. 31	Liabilities	Jan. 1	Dec. 31
Cash on hand and in banks			Notes payable, secured....		
Notes receivable, secured..			Notes payable, unsecured..		
Notes receivable, unsecured			Accounts payable.........		
Accounts receivable.......			Chattel mortgages on		
Government securities.....			Livestock..............		
Other stocks and bonds....			Machinery............		
Cash value of life insurance			Automobile...........		
Feed, grain, and seeds.....			Crops................		
Hogs..................			House furnishings......		
Cattle.................			Past due interest.........		
Poultry................			Past due real estate taxes..		
Sheep.................			Past due personal taxes....		
Horses.................			Past due cash rent........		
Prepaid insurance.........			Loans on life insurance....		
Other current assets.......			Other current liabilities....		
Total current assets.....			Total current liabilities..		
Machinery and equipment.			Mortgages on farm land...		
Automobile..............			Mortgages on other real estate................		
House furnishings.........			Other debts.............		
Farm land and improvements, acres @ $... per acre..............					
Other real estate..........					
Total assets............			Total liabilities........		
Total liabilities.........					
Net worth.............					

* Illinois Farm Record Book.

This statement shows the nature as well as the value of the assets and liabilities. Net worth is the sum of the values of the assets less that of the liabilities, or how much the farmer would be worth if all his obligations were paid. If the net worth at the end of the year is greater than that at the beginning, a gain equal in value to the difference has been made and if less, a loss is indicated. Such a record has considerable value to the farmer in knowing his financial position and to the creditor in extending credit, but it is inadequate for purposes of management. It discloses the

position of the farmer on specific dates but tells nothing of what occurs between those dates nor the causes for the changes shown. Moreover, gains or losses may result from outside influences such as inheritances or gifts received or returns or losses from nonfarm investments. Withdrawals for family uses also affect the result. Even if personal items were classified separately the resulting over-all figure for the farm would offer little guidance for management.

Cash Receipts and Expenses. An unclassified record of cash receipts and expenses shows only how much income was received and how much was spent during the year or accounting period. If receipt and expense items are classified so as to separate personal items from the farm business and further to separate the business items by kinds, the record becomes much more valuable since it portrays the various sources and amounts of receipts and kinds and amounts of expenses. When supplemented by a record of depreciation on capital items, such a tabulation forms a suitable basis for an income-tax return on the cash basis.

From the standpoint of management, however, such a record is deficient. A large cash income may result because inventories carried over from the preceding year have been sold; or cash receipts may be low because much of the current year's production is on hand at the end of the year; or funds may have been invested in buildings, soil improvements, machinery, or livestock which are on hand. The lack of inventories may thus lead to a biased picture of the farm as a business unit.

The Single-entry Record. The single-entry type of record is most commonly used by farmers. As ordinarily used it is limited to the farm business and omits the personal items. This type of record includes inventories and capital values of the farm business at the beginning and end of the accounting year, the purchases and sales during the year, and various production records. A full record of the farm as a unit is secured. Record books of this type vary greatly in the extent to which they provide for breaking down the business into the various enterprises so that each may be studied separately. The amount of information secured depends upon the amount and kinds of details that are recorded. Records of this type ordinarily provide the information needed for filing income-tax returns on either the cash or accrual basis.

Single-entry record books are available from various sources. Those published by the agricultural extension services of the land-grant colleges are adapted to the conditions of the state where issued and include forms and directions for analysis of the completed record. Often some assistance is provided for summarizing and analyzing the record. Some banks and industrial concerns dealing with farmers also publish record books. These differ greatly in value and usually provide only limited detail in the

analysis. Some record books are designed primarily for income-tax purposes and are of little value for the needs of management.

Double-entry or Complete-cost Record. A complete-cost record goes beyond the single-entry record in two respects. It provides for recording much more detail and employs the commercial method of accounting which permits an accurate allocation of receipts and expenses to the various productive enterprises. It provides, therefore, the maximum upon the kind of information desired and the skill of the farmer in keeping has been used chiefly for research purposes and by farm businesses which are large enough to justify the employment of a trained accountant. For farmers generally, however, cost records are not suitable because of the large amount of time and the technical training required.

The kind of record which is best adapted to a farm depends greatly upon the kind of information desired and the skill of the farmer in keeping it. The value of the record may be increased greatly when the services of specialists are available to assist in its interpretation. In this connection the extension projects in farm accounting, carried on by the land-grant colleges, have made wide use of the single-entry type of record with satisfactory results.

Organization of a Single-entry Record

The calendar year beginning Jan. 1 and ending Dec. 31 is most commonly used as a time basis of accounting both for farm analysis and income-tax purposes. A "fiscal" year may be used, *i.e.*, one beginning on the first of any other month and continuing for a 12-month period. To portray accurately the results of the business the record must show the condition at the beginning of the accounting period, the activities of production, buying, selling, and use during the year, and the condition at the end of the period.

Three kinds of financial accounts occur in the record. Each of these, inventory, cash, and capital accounts, is handled in a different way. A clear understanding of each and its place in the record is essential. In addition the farm record includes supplementary information on land use, physical production, unpaid labor, and farm products consumed on the farm. Feed records may also be added.

Inventory Accounts. The inventory accounts include those parts of the farm business which contribute directly to the farm income either through their sale or through their direct use to produce salable products. Market livestock are raised and fattened to produce income. Dairy and breeding animals, while kept for the immediate purposes of producing young animals or livestock products such as milk, eggs, and wool, do eventually go to market, hence are usually included in inventories to-

gether with the market livestock. Work stock, likewise, are usually listed in the inventory accounts because of similarity to other livestock accounts. Dairy, breeding, and work animals may be considered as capital items, but this practice is likely to lead to confusion when young animals listed in the inventories become a part of the dairy or breeding herds.

The crops produced are either for direct sale or for use in producing livestock or livestock products. The various field-crop products are usually grouped together in a "feed, grain, and seeds" account in which each crop is recorded separately. In areas of specialized production it may be desirable to set up special accounts for major sources of income such as fruits, vegetable crops, tobacco, cotton, etc.

Because a part of these products is carried over from one accounting year to the next, inventory accounts have four parts: opening inventory, closing inventory, purchases, and sales. The inventories are a part of the farm investments; they record the amounts and values of each product on hand at the beginning and again at the end of the year. Changes in the price level or in the value of individual items from one inventory period to the next are reflected in the values shown. Purchases of inventory items differ from operating expenses in that they increase the quantity of directly productive goods on hand. Conversely, the sales of such items convert these goods into cash and, on most farms, account for the major part of the farm income.

Cash Accounts. The cash accounts include items that are wholly current in nature; they apply to operating activities and normally have no carry-overs into the next year. Such accounts have receipts and expenses only and no inventories. Credit transactions are usually recorded at the time of the transaction rather than when payment is completed. This practice simplifies the record keeping and avoids omissions.

Cash Receipts. On some farms the largest items of cash receipts are from the sales of dairy products and eggs. These sales might be considered as income to the inventory accounts of dairy cattle and poultry, and are so considered in some parts of the analysis, but because these products are perishable and must be disposed of currently, the sales are classified under the cash accounts. Other cash receipts include those from government payments; custom work performed with farm machinery; other work off the farm; refunds on purchases of motor fuel, feeds, and the like; rental of buildings; breeding fees,[1] and other miscellaneous receipts.

Cash Expenses. Operating expenses are numerous and diverse in character. These include outlays for real estate and personal-property taxes,

[1] In some record books breeding fees are entered as part of the livestock accounts.

hired labor including the value of products furnished, machinery repairs, machinery hire, motor fuel for farm use, commercial fertilizer, crop expense, livestock expense, breeding fees, building and fence repairs, the farm share of expenses for the automobile, electricity, telephone, newspapers, and rental of safety-deposit box, and other miscellaneous items.

The classification of expense items may vary somewhat from one record book to another. The three items of machinery expense, repairs, hire, and motor fuel, for example, might be combined, but the more detailed classification provides a more distinct picture of these major expense items. The purpose to be served is important and any classification should contribute to the later analysis.

Capital Accounts. Capital accounts include those investments in the farm business which contribute indirectly to the income. Two types of investments are represented; those which are worn out over a period in the production of income, and land, which is looked upon as permanent.

Depreciable Items. Types of capital which are worn out in the production of farm income may be classified in four groups: machinery and equipment, automobile, soil improvements, and buildings and fences. Because these items last for a period of years, each individual account has four parts: remaining cost at beginning of year, remaining cost at end of year, capital purchases, and capital sales. The capital purchases represent additions of capital for producing goods for sale or use, and capital sales result when such equipment is sold before it becomes useless. These parts correspond to the purchases and sales of inventory items. Similarly, the remaining costs at the beginning and at the end of the year correspond to the opening and closing inventories. The value of capital items, however, is calculated in a different way from that of inventories.

Land. The land (without improvements) is not subject to depreciation. Its value, of course, may change because of changes in price level or because of changes in productivity which result from cropping practices, erosion damage, application of conservation measures, and the like. Such changes are not reflected as current receipts or expenses in the business record.

The place of the inventory, cash, and capital accounts in the organization of the record, and the parts represented by the individual accounts in each group may be shown graphically (Form 2). Each of these individual accounts may contain many entries with which would be recorded details of dates, quantities, and values.

From this illustration it is apparent that the total investment in the business at the beginning and end of the year is the combined value of inventory and capital accounts. Cash income is of three kinds: that from sales of inventory items, receipts from cash accounts, and sales of capital items.

FORM 2. OUTLINE OF FINANCIAL ACCOUNTS

I. Inventory Accounts

	Inventory, Jan. 1	*Purchases*	*Sales*	*Inventory, Dec. 31*
Cattle	....	....	....	....
Hogs	....	....	....	....
Sheep	....	....	....	....
Poultry	....	....	....	....
Horses	....	....	....	....
Feed, grain, and seeds	....	....	....	....

II. Cash Accounts

Receipts	*Purchases*	*Sales and Receipts*
Dairy products		....
Eggs		....
Government payments		....
Custom work		....
Work off farm		....
Refunds		....
Breeding fees		....
Miscellaneous		....
Expenses		
Taxes	....	
Hired labor	....	
Machinery repair	....	
Machinery hire	....	
Motor fuel	....	
Fertilizer	....	
Crop expense	....	
Livestock expense	....	
Building and fence repairs	....	
Insurance	....	
Interest	....	
Automobile expense (farm share)	....	
Electricity (farm share)	....	
Telephone (farm share)	....	
Miscellaneous	....	

III. Capital Accounts

	Remaining Cost, Jan. 1	*Capital Purchases*	*Capital Sales*	*Remaining Cost, Dec. 31*
Machinery and equipment	....	....	....	....
Automobile (farm share)	....	....	....	....
Soil improvements	....	....	....	....
Buildings and fences	....	....	....	....
	Value, Jan. 1			*Value, Dec. 31*
Land	....			....

Money paid out is also of three sorts: for purchases of inventory items, operating expenses under cash accounts, and capital purchases.

Valuation of Items in Financial Accounts. Purchases and sales, whether of items in inventory, cash, or capital accounts, establish specific values for record purposes. The valuation of inventories and remaining cost of depreciable capital items is more difficult. For inventory purposes, market values less cost of marketing are commonly used. This basis is easily applied to livestock which is in near-market condition, but requires judgment in applying it to growing or half-finished livestock, and especially to dairy and breeding animals, whose value depends largely upon their usefulness in the herd. For feed and grains the chief problem is concerned with ascertaining the correct quantities on hand, and in some cases quality must be considered.

Depreciation. The value of depreciable capital items is based upon their cost to the owner adjusted for the annual wear and tear for the years he has used them. This yearly wear and tear is called depreciation. The basic principle is that the full cost of such farm property should be charged off as farm expense, but the cost must be prorated over the expected life. The remaining cost of an item at the beginning of the year is its cost when acquired reduced by the annual allowances for depreciation for the years it has been used. Its value at the end of the year, of course, is further reduced by the amount of depreciation for the year.

Depreciation is frequently disregarded because no money is paid out currently. Depreciation is really a prepaid expense, the outlay having been made when the machine or other item was purchased. The annual calculation of depreciation is simply charging a fair part of this prepaid expense to the current year's operations. Several methods of calculating depreciation are in use, but that most commonly used is the straight-line method in which the original cost is distributed evenly over the estimated years of life; for example, a tractor, purchased for $2,250 and estimated to last 10 years, has an annual depreciation of $225.

Depreciation on machinery gives little difficulty, for the cost is usually known and the useful life can be estimated fairly accurately. Miscellaneous small tools of low cost and short life are usually charged off currently.

The automobile differs from machinery only because it is commonly used for both farm and family purposes; hence the expenses (and income, if any) must be divided at the end of the year.

The cost of soil-building materials such as agricultural limestone and rock phosphate, whose value extends over several years, is depreciated in the same manner as machinery, a 5-year period being frequently used. The cost of some soil-conservation structures not made of earth may be handled in the same way.

The greatest difficulty arises with depreciation on buildings because of their longer periods of use and because they are normally bought as part of the farm; hence no separate valuation is established. The farmer's dwelling is excluded from the list of buildings except when parts are used for business purposes, like providing shelter for hired help, because his home is a personal rather than a business item; the house for the hired man, however, is included. For new buildings the costs of materials and labor are known, and the chief problem is estimating the life, which may vary from perhaps 5 years for temporary corn cribs to 40 or 50 years for permanent structures. For older buildings both current values and remaining life must often rely upon careful estimates. The remaining value of capital items at the end of the year is carried over as the beginning value for the following year.

Land Values. The appraisal of land values is probably subject to the greatest variation. Extremely high values of inflation periods or low values of depression periods obscure the longer run productive basis of value. For land which was purchased recently its cost (less value of improvements) establishes its value. In other situations land-classification ratings or soil classifications or productivity ratings may furnish useful guides, as do sales of similar land in the area. For accounting purposes land is often carried at rather conservative and stable values.

Supplementary Records. To analyze the farm business a number of supplementary records are also needed. Considerable information regarding physical quantities is normally included with the financial accounts. but some strictly physical measures help to round out the picture. The more common kinds of supplementary records are the farm map and records of crop production, livestock production, unpaid labor, feeds used, and farm products consumed by the family.

The farm map is a sketch of the field layout, drawn roughly to scale, and showing the cropping plan for the year. It may be used, too, to record the application of soil-building materials, varieties of crops, dates of planting, harvesting, and the like.

The crop-production record accounts for the crops grown and land use. It lists acreages and total production of each crop, and the use and acreages of nonharvested areas such as tillable and untillable pasture, farmstead, roads, and the like.

Livestock-production records indicate the number of animals which are born and raised during the year as well as the number of death losses. Records of daily egg and milk production are provided in some record books. In others these figures may be calculated from quantities sold and used. Production by weight of meat animals can be figured easily by a

simple table which combines figures from other parts of the record. This can be applied as shown in the accompanying form.

To account for	No.	Weight	Accounted for	No.	Weight
Inventory, Jan. 1...........			Sales.....................		
Purchases.................			Used in home............		
Raised....................			Deaths...................		
			Inventory, Dec. 31.........		
Total to account for......			Total accounted for......		

The total number of animals to account for should equal the total accounted for. The total weight accounted for less the weights for the Jan. 1 inventory and purchases gives the net production for the year.

A similar check may be applied to quantities of various kinds of grain, hay, or other feed produced on the farm, as shown in the form on page 346.

Inasmuch as feed makes up the major cost in livestock production, records of feeds used provide valuable information on the livestock enterprises. If they are not available a rough measure of feeds used may be secured from such a check table by subtracting the sum of the quantities sold, used for seed, and end-of-year inventory from the totals to account for. Much more useful records are secured, however, if actual amounts fed are recorded currently for each class of livestock. For practical purposes a careful check one or two days a month and when changes in rations are made will provide a satisfactory basis for calculating monthly amounts of feed. Quantities of raised feeds are converted to values by multiplying the quantity of each feed used by its average yearly price per unit. The record provides the quantities and cost of purchased feeds.

A record of the months and value of unpaid labor of the farm operator and members of the family is necessary to ascertain the total amount and value of labor used. Although not a cash item, unpaid labor is an expense to the farm and must be considered in summarizing the record. Its value is based upon hired-labor rates in the area.

The record of farm products consumed by the family helps to round out the picture of total farm production and the extent to which the farm contributes food and fuel to the family. Meats, dairy and poultry products, vegetables, and fruits produced on the farm materially reduce the cost of purchased foods. These items are valued at prices received for similar products sold. The total value represents one part of the farm production, but in some record books it is not included in total income.

Feed, grain, and seeds—check sheet

Items	Corn, bu.	Wheat bu.	Oats, bu.	Bu.		Corn silage	Alfalfa hay	Hay	
Beginning of year inventory........									
Quantities purchased.............									
Produced......................									
Totals to account for...........									
Sold..........................									
Used for seed..................									
Fed to livestock................									
End of year inventory...........									
Totals accounted for...........			20						
Shrinkage or overrun............									

Up to this point the discussion of the single-entry record has dealt largely with its organization and mechanics, the items that should be listed, and their place in the farm record. The record books available in different states are by no means uniform; some provide for much more complete records than others. It is apparent that the more information is included, the more complex the record becomes.

An actual record from a typical farm reduced to the diary form in which the items occur makes an excellent means with which to familiarize students with the mechanics of record keeping and to form the basis for analysis. Such a problem should be adapted to the scope of the record book available and should use current production and price figures.

What a Farm Record Shows

A farm record organized into the financial accounts and supplementary records outlined in the preceding pages provides much information regarding the total investment, the sources and amounts of income, the kinds and amounts of expenses, and many details of production. Whether such figures or others that may be derived from them indicate a satisfactory accomplishment, however, cannot be known until they are compared with some sort of standard. There are no absolute standards for farms, for it is evident that the results will be influenced greatly by the organization and operation of the farm as well as by growing conditions and price levels of the particular year. Records for the same farm for the previous year or years would provide a useful basis for comparison; yet differences in weather and price levels would likely give rise to somewhat different results.

Another type of standard may be derived from the average results for the same year from other record-keeping farms in the area, since they are all operated under the same conditions of weather and price levels. Therein lies the value of participation in an organized accounting project such as those sponsored by the land-grant colleges, or of using a type of record which provides comparable figures. Because farms vary so greatly in size and organization the comparison for a particular farm is most useful if made with a group of farms which are similar in these respects.

While some comparisons are made by using totals from the record, most are expressed in units of various kinds. Yields of crops, for example, are compared on the acre basis as are some figures of income and expense. For some purposes, such as machinery and labor costs, the acres in crops makes a more appropriate basis because nearly all such costs are related to the crop area. Similarly for livestock enterprises, egg production and returns

per hen, milk production and returns per cow, number of pigs and income per litter are ways of making comparisons understandable. The sources of income or the use of land may be expressed on a proportional or percentage basis. These and other comparisons are simply ways of indicating whether a particular farm is above or below a standard and in what respects the farm business is strong or weak.

Measures of Farm Earnings

The objective of farm management is to secure high net farm earnings. Farm earnings measure the efficiency of the farm as a whole. They may be expressed as a total, as an amount per acre, or as a rate of return on the total capital investment. The level of farm earnings depends upon (1) the organization of the business, (2) the volume of business, and (3) the efficiency of operation. The use of these various measures may be illustrated by data from the summary of a sample farm of 150 acres.

The Sample Farm. The sample farm is a 150-acre unit centrally located in the Middle West on prairie-type soils, has rolling topography, and a fairly high productivity rating. (Productivity is 3.0 on a scale of 10 in which 1 is highest and 10 is lowest.) The 40 acres of pasture listed as untillable is in bluegrass, but could be used safely for cultivated crops if soil-conservation measures were used. The buildings are old and inadequate. The operator, who is of middle age, owns the farm; his grown son is employed on it. Production is quite diversified, the dairy enterprise being sufficiently outstanding to classify the unit as a dairy farm. Milk from the high-producing Holstein herd is sold in bulk on a grade C basis. Milking is done by hand.

During the year 1949, for which the record is shown, conditions for crop production were rather favorable. No hay was harvested, although ample amounts for feeding are normally grown. Crop sales consisted of wheat, soybeans, and 500 bushels of corn.

The summary of the financial record is given in Table 80, and supplementary information on inventory accounts, land use and crop production, products consumed, labor, livestock production, and land value in Table 81. What information may be derived from these data that will be of value in directing the management of such a farm?

Individual farms, of course, differ in many respects. The measures that may be applied to advantage to a particular farm are limited by the enterprises on that farm and the amount of detail provided in the record book. It is desirable first to construct measures which apply to the farm business as a whole, then to examine the various parts of the business in more detail.

TABLE 80. SUMMARY OF FINANCIAL RECORD ON SAMPLE FARM, 1949

	I. Inventory Accounts			
	Inventory, Jan. 1	*Purchases*	*Sales*	*Inventory, Dec. 31*
Cattle	$1,450	—	$298	$1,700
Hogs	950	$100	784	1,779
Sheep	140	—	138	180
Poultry	108	37	78	141
Horses	170	—	—	170
Feed, grain, and seeds	3,358	1,386	3,500	2,822
Total	$6,176	$1,523	$4,798	$6,792
	II. Cash Accounts			
Receipts		*Purchases*	*Sales and Receipts*	
Dairy products			$3,019	
Eggs			356	
Government payments			32	
Custom work			—	
Work off farm			—	
Refunds			40	
Breeding fees			—	
Miscellaneous			15	
Total			$3,462	
Expenses				
Taxes		$542		
Hired labor		1,919		
Machinery repair		266		
Machinery hire		19		
Motor fuel		226		
Fertilizer		185		
Crop expense		—		
Livestock expense		82		
Building and fence repairs		113		
Insurance		—		
Interest		—		
Automobile expense (farm share)		58		
Electricity (farm share)		20		
Telephone (farm share)		12		
Miscellaneous		62		
Total		$3,504		
	III. Capital Accounts			
	Remaining Cost, Jan. 1	*Capital Purchases*	*Capital Sales*	*Remaining Cost, Dec. 31*
Machinery and equipment	$3,262	$488	—	$3,171
Automobile (farm share)	—	—	—	—
Soil improvements	445	116	—	390
Buildings and fences	1,700	193	—	1,741
Total	$5,407	$797	—	$5,302
	Value, Jan. 1			*Value, Dec. 31*
Land	$14,525			$14,525
Total	$26,108	$5,824	$8,260	$26,619

TABLE 81. SUPPLEMENTARY DATA ON SAMPLE FARM, 1949

	Inventory, Jan. 1		*Purchases*		*Sales*		*Inventory, Dec. 31*	
	No.	*Weight*	*No.*	*Weight*	*No.*	*Weight*	*No.*	*Weight*
Cattle	16	13,200	—	—	6	1,960	20	14,300
Hogs	12	3,050	2	600	21	4,845	77	10,800
Sheep	11	1,700	—	—	6	800	12	2,180
Poultry	108	550	250*	—	80	418	139	720
Horses	2	—	—	—	—	—	2	—

Land Use and Crop Production

Crops	*Acres*	*Production*
Corn	35	2,600 bu.
Oats	10	400 bu.
Wheat	30	1,140 bu.
Soybeans	13	330 bu.
Pasture	20	(Tillable)
Pasture	40	(Untillable)
Farmstead	2	
Total	150	
Crop acres	88	
Soil-productivity rating		3.0

Products Consumed in Household

Poultry, 127, weight 381 lb	$127
Eggs	153
Dairy products	180
Hogs, 2, weight 600 lb	99
Total	$559

Labor, Amount and Value

Operator,	12 months	$1,800
Family,	4 months	600
Hired,	12 months	1,919
Total	28 months	$4,319

Livestock Production

Average number of milk cows 10; total pounds of milk 108,640.
Calves born 11; calves sold 6; died 1.
Spring pigs, 5 litters; pigs farrowed 32; pigs weaned 21.
Summer pigs, 6 litters; pigs farrowed 48; pigs weaned 33.
Fall pigs, 5 litters; pigs farrowed 42; pigs weaned 32.
Total 16 litters; pigs weaned 86; pork produced 12,595 lb.
Average number of hens 121; eggs produced 15,996.
Baby chicks bought 250; died 12.
Lambs born 8; died 1.

Land Value

110 acres improved land	$12,525
40 acres untillable pasture	2,000
150 acres	$14,525

Depreciation

Machinery and equipment	$579
Soil improvements	171
Buildings and fences	152
Automobile—depreciated out	

* Baby chicks.

General Measures of Earnings. In practice the different parts of the financial summary are combined in various ways to secure gross figures of receipts and expenses and net figures of receipts. The following method has the advantage of separating items associated with receipts from those associated with expenses (Table 82).

Gross Receipts. Sales of livestock are receipts, but this figure needs to be corrected by deducting the value of livestock purchases; otherwise

the volume of sales is distorted particularly on farms where feeder stock are bought. Sales of crops are likewise receipts. If the value of inventories of livestock and crops at the end of the year is greater than that at the beginning, the difference is a receipt, although it has not been converted into cash. Conversely a decrease in value of inventories is a deduction from receipts, so is subtracted. Receipts from the various cash accounts repre-

TABLE 82. SUMMARY OF GROSS RECEIPTS, GROSS EXPENSES, AND GENERAL MEASURES OF EARNINGS, SAMPLE FARM, 1949

Gross receipts:		
Sales of livestock	$1,298	
Less livestock purchases	137	$1,161
Sales of crops		3,500
Increase in inventory of livestock and crops		616
Receipts from cash accounts		3,462
Products consumed in household		559
Total gross receipts		$9,298
Gross expenses:		
Feed purchases		$1,386
Expenses from cash accounts		3,504
Capital purchases	$797	
Less capital sales	0	797
Decrease in capital accounts (Jan. 1 to Dec. 31)		105
Total gross expenses		$5,792
Returns for unpaid labor, capital, and management		$3,506
Family labor		600
Returns for operator's labor, capital, and management		$2,906
Operator's labor		1,800
Returns for capital and management		$1,106
Rate earned on capital		4.24%
Returns for operator's labor, capital, and management		$2,906
Interest on capital investment at 5%		1,305
Operator's labor and management earnings		$1,601

sent cash received. The value of products consumed is a receipt or credit to the farm, for these products could have been sold. These items then comprise the gross receipts.

Gross Expenses. Feed purchases are listed as expenses inasmuch as they are made for the production of livestock and livestock products. This classification is also in line with income-tax procedure. Similarly operating expenses in the cash accounts section are included. Capital purchases, reduced by the amount of capital sales, also belong in this category. Decrease in value of capital accounts from the beginning to the end of the year are normally caused by depreciation which is an expense. Increases in capital

accounts would be offset by capital purchases; hence such increases are subtracted from expenses.

The total gross receipts less total gross expenses give returns for unpaid labor, capital, and management.[2] By subtracting the value of family labor the remainder represents returns to the operator for his labor, capital, and management. From this point two over-all measures may be derived: rate earned on the investment and labor and management earnings. The rate earned is secured by deducting the value of the operator's labor, and the remainder (returns for capital and management) is divided by the total farm investment and multiplied by 100. The rate earned is expressed as a percentage of the total capital investment. It is the better measure of total farm efficiency when the interest charge for capital is large in comparison to cost of labor.

Labor and management earnings are derived from the returns for operator's labor, capital, and management by deducting interest on the total capital investment. This measure is useful when the labor charge is large in relation to the interest charge for capital; it is faulty in that it is directly influenced by the volume of business. This figure is also used to express the tenant's share on a rented farm since the tenant normally provides labor and management, but a minor part of the capital.

	Sample farm	Standard*
Rate earned, %	4.24	6.58
Labor and management earnings	$1,601	$2,227
Capital and management per acre	$7.37	$15.94

* Except for crop yields the standard consists of averages for 92 record-keeping dairy farms of less than 180 acres in size. Crop yields are compared with all record-keeping farms having the same productivity rating.

The return for capital and management may also be expressed on a per acre basis by dividing it by the total farm acreage.

[2] This same result may be attained by another method in which total cash expenses (purchases of inventory accounts, expenses from cash accounts, and purchases of capital items) is deducted from total cash income (sales of inventory accounts, receipts from cash accounts, and sales of capital items) to give a cash balance. This cash balance is then adjusted for changes in inventory and capital items (by adding increases and subtracting decreases). Finally the value of products consumed is added. This method, while easily calculated, does not recognize differences in the character of the various accounts.

When farm earnings, expressed as the rate earned, the operator's labor and management earnings, or capital and management per acre, are compared with a standard it is apparent whether the earnings are above or below the level that might be expected. Further analysis is necessary to find the influences responsible for this level of earnings.

As indicated in the table on page 352, three major influences affect the level of earnings: (1) the organization of the business, (2) its volume, and (3) the efficiency of its operation. These influences, of course, depend largely upon the managerial ability of the operator. They cannot be sharply separated for they overlap to some degree.

Measures of Organization. As indicated in the preceding chapter the organization of the farm business consists of the kinds and proportions of its resources. These resources vary greatly from farm to farm; hence the problem is to make the best use of them. The measures used indicate certain aspects of the organization or of the major enterprises. The figures for the sample farm and those for the standard are shown in the accompanying table.

Measures of organization	Sample farm	Standard
Per cent of farm tillable	72	85
Per cent of tillable land in grain crops	82	65
Per cent of gross receipts from crops	32	16
Per cent of gross receipts from dairy	40	56
Per cent of gross receipts from hogs	17	15
Per cent of gross receipts from all productive livestock	67	81
Total value of feed fed to productive livestock	$3,765	$5,547
Total number of cows milked	10	17
Total acres of grain	88	75
Number of litters of pigs farrowed	16	8
Soil-productivity rating	3.0	3.4

The return for a particular enterprise is calculated by subtracting the sum of all the debits or expense items from the sum of the credit or income items for that enterprise. The return for dairy cattle on the sample farm, for example, is calculated as shown in the table at the top of page 354. Returns for other livestock enterprises are calculated in the same way, and those for all productive livestock by combining the returns for cattle, hogs, sheep, and poultry. Returns for crops are more involved because the feeds purchased and part of those raised are used in livestock production, hence show up in the returns of livestock. This was corrected for in

	Debits	*Credits*
Inventory, Jan. 1	$1,450	—
Purchases	0	—
Sales of dairy cattle	—	$298
Inventory, Dec. 31	—	1,700
Sales of dairy products	—	3,019
Value of dairy products consumed	—	180
Total	$1,450	$5,197
		1,450
Net return		$3,747

part by placing purchased feeds in the expense section. The returns for crops, therefore, include crop sales and inventory changes. This method does not credit the farm with the value of raised crops fed, but to do so would count this value twice: once as income from crops and again in the value of livestock and livestock products produced from that feed.

Measures of Volume. The volume of the farm business depends upon both its extent or scope and its intensity. The total volume may be inadequate, because the farm is too small, because it lacks intensity, or because it is too limited in both respects. The extent may be measured in terms of various resources as shown in the accompanying table.

Measures of extent	Sample farm	Standard
Total acres in farm	150	137
Total number of crop acres*	88	92
Total capital invested*	$26,108	$33,281
Total gross receipts	$9,298	$11,077
Total net receipts	$3,506	$4,278
Total months of labor used*	28	18.4

* "Crop acres" is the area upon which ground preparation, cultivation, or harvesting work is performed. "Total capital" is the beginning of year value of inventory accounts and capital accounts including land. "Months of labor" is months worked by hired, operator, and unpaid family labor.

Extent may also be measured by the scope of individual enterprises, particularly if the farm is specialized, or by a combination of enterprises. Thus some of the values listed under measures of organization also denote extent. Such measures include the total value of feed fed to productive livestock, total number of cows milked, total acres of grain, and number of litters of pigs farrowed.

Intensity, by contrast, measures the volume of business per unit. It, too, is measured in terms of various resources.

Measures of intensity	Sample farm	Standard
Total investment per acre	$174.05	$242.93
Operating capital per acre*	62.92	94.38
Gross receipts per acre	61.98	80.85
Net receipts per acre	23.33	31.23
Value of feed fed per acre†	25.10	40.49
Total capital per man‡	11,157	21,710
Gross receipts per man	4,032	7,874

* Operating capital is the Jan. 1 values of inventories, machinery, and farm share of automobile.

† Value of feed fed is best derived by applying average prices to feed records for each kind of livestock. Without such records a rough figure of feed quantities used by all livestock may be calculated by using the form shown on page 346. By deducting estimated quantities fed to horses and applying to the remainder average values for each kind of feed, the total value of feed to productive livestock is secured.

‡ Total capital per man equals total investment Jan. 1 divided by number of men. "Number of men" is calculated as total months of labor divided by 12.

Some measures of organization, listed above, also indicate intensity. Percentage of land tillable, percentage of tillable land in grain crops, and percentage of gross income from productive livestock serve in this dual capacity. It is evident that a good volume of business is more readily attained under most conditions by combining reasonable degrees of extent and intensity, rather than by relying on either alone.

Measures of Efficiency of Operation. Efficiency in operation is secured when receipts are high in relation to the costs incurred. Costs of each enterprise are not known, but for the farm as a whole those for labor and for machinery and equipment are major items. Inasmuch as crops and livestock contribute a large part of the farm income, major points of operating efficiency may be measured through crop yields, livestock production and returns, labor costs, machinery and equipment costs, and prices received.

Crop Yields. Crop yields per acre for major crops may be compared directly if soils have similar degrees of productivity. To combine yields of various crops into a single figure requires the use of a crop-yield index or conversion of crop production to a value basis per acre for all crops grown.

The crop-yield index is a ratio of the number of acres used to grow the crops on the individual farm to the number of acres required to produce the same quantities of products at average yields. The following example illustrates the direct comparison of yields, the crop-yield index, and the dollar values per acre for all crops.

Crop	Sample farm			Av. of farms with similar productivity	
	Acres	Yield	Production, bu.	Av. yield	Acres at av. yield
Corn	35.0	74.3	2,600	64	40.6
Oats	10.0	40.0	400	45	8.9
Wheat	30.0	38.0	1,140	31	36.8
Soybeans	13.0	25.4	330	30	11.0
Total	88.0	....	.....	..	97.3

Crop yield index = (97.3 ÷ 88.0 × 100) or 110.6

Crop	Dollar-value basis					
	Sample farm			Av. of farms of similar productivity		
	Acres	Production, bu.	Value	Acres	Production, bu.	Value
Corn	35.0	2,600	$2,600	45	2,880	$2,880
Oats	10.0	400	280	26	1,170	819
Wheat	30.0	1,140	2,052	1	31	56
Soybeans	13.0	330	693	3.5	105	220
Total	88.0	.....	$5,625	75.5	.....	$3,975
Average value per acre	....	.....	$63.92	....	.....	$52.65

The direct comparison of yields obviously is limited to each kind of crop. The crop-yield index provides a means of combining yields of different crops, but with this measure all crops are given equal weight. Crops differ greatly in acre value; corn, for example, has a high value, and oats a low value. The dollar-value basis of comparison reflects the effects of cropping systems as well as yields so is not wholly a measure of yields.

Livestock Efficiency. Because the value of feed represents a major part of the cost in livestock production the returns for each $100 worth of feed used for each kind of livestock is the best single measure of efficiency. Unfortunately few farmers have actual or approximate records of feeds used. Total feed disappearance can be calculated, as illustrated earlier (page 346), and a total value secured by applying average values to each kind of feed. Total feed costs include both raised and purchased feeds used. Such a measure is most valuable when it is limited to farms with like kinds and proportions of livestock because the returns necessary to cover

costs of feed and other expenses vary from one class of livestock to another.

Additional measures may be applied to certain livestock enterprises based upon quantities of physical production or value of product per animal. The methods of computation are evident.

Efficiency measures	Sample farm	Standard
Production:		
Milk per cow milked, lb	10,864	8,900
Pork per litter farrowed, lb	787	1,452
Number of pigs weaned per litter	5.4	6.3
Number of eggs per hen	132	177
Returns:		
Dairy returns per cow milked	$374.70	$366.04
Hog returns per litter farrowed	100.75	203.12
Egg returns per hen	4.21	6.34

Labor Efficiency. The cost of operation is greatly influenced by the area (acres) of the farm and the intensity of its enterprises. Measures relating to operation are valid, therefore, only for farms of similar size and organization. They are applied on a crop-acreage basis. Labor costs include fair values for the labor of the operator and unpaid members of the family as well as the cost of hired labor.

Efficiency measures	Sample farm	Standard
Crop acres per man	37.8	60.0
Labor cost per crop acre*	$49.08	$29.83

* "Labor cost" is value of all labor: hired, operator, and family labor.

Measures of Machinery and Equipment Economy. Present mechanized methods require a rather large investment in machinery and equipment. Depreciation costs are heavy, and other operating expenses consist mostly of cash outlays. Such investments and expenses may be burdensome on

Efficiency measures	Sample farm	Standard
Machinery and equipment cost* per crop acre	$14.48	$27.08
Machinery and equipment investment per crop acre	37.07	35.48

* "Machinery and equipment cost" is the sum of cash expenses for machinery repair, machinery hire, motor fuel, electricity, telephone, and automobile expense plus depreciation on machinery and automobile, less horse returns or plus horse costs, less profit on machinery and automobile sales.

smaller farms or under conditions where machines are used on too small an acreage. These measures like labor costs are compared on the crop acre basis.

Prices Received for Products Sold. The farm income is directly affected by the prices received for products. While differences per unit may appear small, the number of units sold reflects the effect upon the net income.

AVERAGE PRICE RECEIVED

	Sample farm	Standard
Milk, cwt.	$2.92	$3.44
Hogs, cwt.	16.18	18.15
Eggs, doz.	0.38	0.43
Corn, bu.	1.06	1.29
Soybeans, bu.	2.18	2.20
Wheat, bu.	1.87	1.87

Application of Efficiency Measures. The major function of a farm record, as pointed out earlier, is to provide guides for management. For this purpose efficiency measures are useful tools, but their use must be limited to situations which are comparable, for differences in systems of farming, farm area, and intensity require different standards.

The sample farm compares favorably with the standard in several respects and is deficient in some. This farm, while slightly larger in acreage than the average of the dairy farms with which it is compared, falls short in its earnings whether measured by rate earned, labor and management earnings, capital and management per acre, gross receipts, or net receipts. Despite the diversity of crops and livestock which increased the volume of business, gross receipts were much below the standard. The potential crop area was not fully utilized, and the permanent-pasture area was too large. The amount of livestock, as indicated by the value of feed fed per acre, was considerably below average, but limits here were apparently set by building facilities. Crop yields were quite satisfactory, with a large proportion of the crop area in the higher value crops. Milk production per cow was high, but in the hog and poultry enterprises production was low. Gross expenses were well below the standard, but they indicated a lack of balance. Although machinery expenses were low, the charge for hired labor was high. The sum of expenses for machinery and total labor (hired and unpaid) exceeded that of the standard by $360. The prices received, particularly for livestock and livestock products, were much below average. Limitations of facilities were reflected here again by the sale of grade C milk and the late litters of pigs.

The analysis of the record simply points out the facts; it does not explain why these results were secured. Numerous causes may contribute to the strong and weak points in the business; some may be apparent, and others may be hidden in the organization of the farm or in the practices involved in its operation. It is in the interpretation of these efficiency measures and suggesting ways of correcting the weaknesses that the county agent, the extension specialist, or the professional farm manager, who is familiar with the area and its problems, can be most useful.

Use of Records for Income-tax Returns

The single-entry type of record supplies the information needed to file a Federal income-tax return on either the cash or accrual basis. The accrual basis makes use of the inventory accounts and the receipts section of the cash accounts in calculating income, and the expense section of the cash accounts and depreciation in the capital accounts in figuring business deductions. The cash basis differs from the accrual in that inventories are disregarded. Sales of all inventory items are included, however, but the cost of livestock purchased, adjusted for any depreciation, is deducted from receipts in the year in which the animals are sold. Under either basis the value of products consumed is not reported as income although adjustments in the farm expenses are sometimes required to offset the expense of raising them. For either basis the difference between the total income, designated as gross profits, and the business deductions is the net profit which is reported on Internal Revenue Form 1040F.

Summary

Farm records are a means to certain ends. These ends or purposes are to provide a history of the farm, a general picture of its earnings, a basis for evaluating and improving its organization and operation, and information for filing income-tax returns. While various kinds of records may be used, the single-entry record has proved to be best adapted to serve these purposes. Such a record, if properly organized, classifies the financial aspects of the business into inventory, cash, and capital accounts; and each of these kinds of accounts is subdivided into enterprises and types of transactions to provide the details needed for analysis. Supplementary records of physical production and use furnish additional data.

The farm record thus classified provides an annual history of the investment, enterprises, rotation, yields, soil treatment, and method of operation. It supplies also the information required to file an income-tax return on either the cash or the accrual basis. Most important of all, it furnishes the basis for ascertaining measures of farm earnings which apply not only to its general level of earnings, but also to various phases of its organiza-

tion, its volume of business, and the efficiency of its operation. These various measures have their greatest value when compared with standards based upon results secured by other farmers operating under like conditions. Such a comparison discloses points of strength and weakness but may not show the causes of these conditions. Careful study of the business at these points may indicate needed adjustments in organization and operation to improve or eliminate the points of weakness and to take full advantage of the points of strength.

QUESTIONS

1. Why should a farmer keep records?
2. What kinds of records might he use? What items would be included in each?
3. What kinds of accounts are included in a single-entry or farm financial record?
4. Of what parts is each kind of account composed? How do inventories differ from capital accounts?
5. What is depreciation? To what does it apply? How it is calculated?
6. What expense items are usually divided between the farm business and the household? Why?
7. Is the farmer's dwelling included under farm improvements? Why or why not?
8. Why are entries made for the operator's labor? For unpaid labor of the family?
9. Why include home-raised products used by the family? Are they receipts or expenses?
10. What advantages are secured by comparing the results of one record with the average of an area group?
11. In analyzing a record, what general measures of earnings may be used? How are they calculated?
12. What specific comparisons relate to the organization of the farm business?
13. In measuring volume distinguish between extent and intensity. How measure each?
14. In what ways may efficiency of operation be indicated? How are such measures calculated?
15. What parts of the record are needed for making an income-tax return on the cash basis? On the accrual basis?

EXERCISES

1. Mechanics of a farm record. Secure a farm record, and rearrange items in chronological order. Enter this revised problem in the farm record book used in your state, and summarize the record.
2. Analysis of a farm record. Using the summary and other information from Exercise 1 calculate as many of the comparisons given in this chapter

as apply to this farm. Compare these figures with a standard if one is available.

3. Use of a farm record for income-tax purposes. Secure copies of Form 1040F from an Internal Revenue office. Read the directions carefully. Using the summary from Exercise 1 or of the sample farm in this chapter fill out Form 1040F for both the cash and the accrual basis and compare the results.

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Chapter 17. RURAL PEOPLE

A major objective of agricultural production is to provide a satisfying life to those engaged in it. The human side of agriculture goes even further for half the children leave the farm and enter other occupations. Thus the urban centers grow as a result of this movement of farm people to cities. Many students, even though reared on a farm, take their environment for granted and fail to see the significance of changes in rural living conditions and how these affect the welfare not only of farm people but of the entire country.

Many of the economic aspects of farm life have been developed in the preceding chapters. But farm life has a social side as well. Indeed this topic constitutes a broad field of study in itself. Farm people and their activities are here treated in a general way with respect to the farm population, the families which compose it, the communities in which they live, and their schools and churches as illustrative of their institutions.

Farm Population

The total population of the country has increased 39 times from 3.9 million in 1790 to 150.7 million in 1950. At this earlier date the population was nearly all rural. The classification of urban, including those living in towns and cities of 2,500 or more, and rural, those living outside such places, was applied first to the Census of 1880. At that time 71.4 per cent was rural and 28.6 per cent urban. By 1920 the proportion of urban population exceeded the rural, and in 1940, urban population was 56.5 per cent and rural, 43.5 per cent. The rural population has continued to increase in numbers but makes up a declining proportion of the entire population (Fig. 34).

The rural population is subdivided by the Census Bureau into farm and nonfarm groups, the latter including residents of villages and towns with less than 2,500 persons. The rural-nonfarm population numbered 12.8 million in 1880, or slightly more than one-fourth of the entire population. It has increased in numbers steadily though at a slower rate than the urban population and in 1940 numbered 26.7 million, or slightly more than one-fifth of the total. The farm population has followed a different trend.

From an estimated number of 9.0 million in 1840, it increased steadily to a high point of 32.1 million in 1910, and since then has declined to 30.5 million in 1940 and to an estimated 28.8 million in April, 1949. The proportion of the total population living on farms has continually declined. In 1840 it was 52.6 per cent; in 1880, 45.6 per cent; in 1910, 36.0 per cent; in 1940, 23.1 per cent; and in 1949, 18.8 per cent.

Because of the very broad definition of farms as given in the Census, the farm population includes many persons who are not popularly considered to be farmers. As indicated in Table 18, 43 per cent of all farms may be classed as noncommercial because they produce only 5 per cent

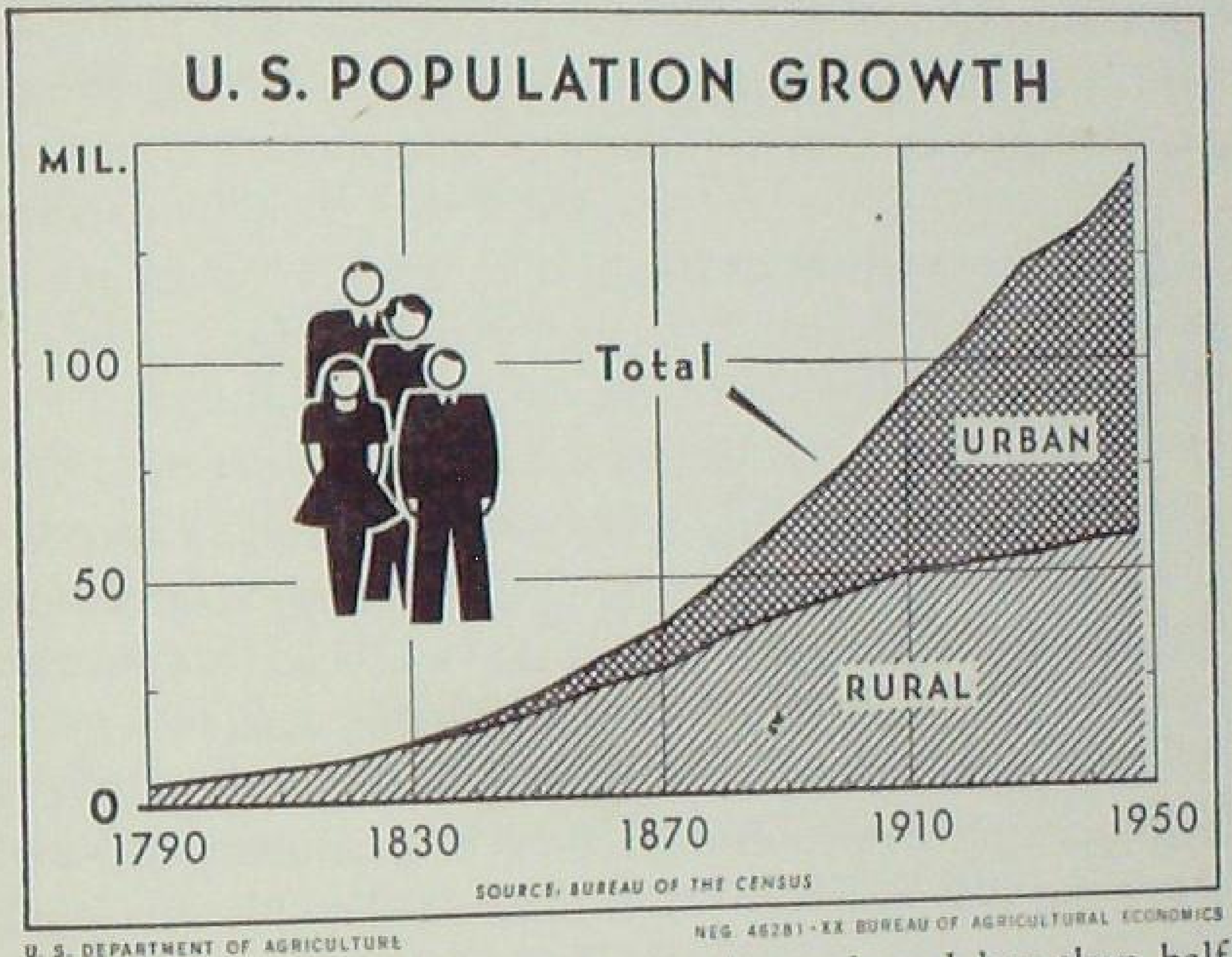

FIG. 34. Less than half of our population is rural, and less than half of the rural people live on farms. Farm people make up less than one in five of the total.

of the value of products sold. They account, however, for 38 per cent of the farm population and for 31.5 per cent of the value of farm products used on farms. Thus the farm population includes many families on a subsistence or part-time basis and many others who reside on farms but are otherwise employed. No other occupation has so large a proportion of its population on its margin.

The geographical distribution of the farm population is significant. In 1940 the 16 Southern states, which are largely agricultural, included approximately 53 per cent of the farm population; the Northern states, including New England, the Middle Atlantic states and the Middle West, 39 per cent; and the 15 Western states, 7 per cent.[1] By contrast the rural-nonfarm population is concentrated more heavily in the Northern and

[1] Lowry Nelson, Rural Sociology, p. 119.

Western states and less in the Southern, while the urban population is heavily concentrated in the Northeastern quarter of the country.

Trends in Rural Birth Rates. The decline in the farm population since 1910 is a result of improvement in agricultural techniques under which fewer workers are required and of a decline in the birth rate. For the entire population the birth rate has declined steadily since 1810.[2] Its rate of decline has been most marked in the urban population, intermediate in the rural-nonfarm group, and least in the rural-farm population. The relative changes in these groups are shown by a comparison of their net reproduction rates for the periods 1905 to 1910 and 1935 to 1940.[3] The adjusted rate of 1,000 will just maintain a stationary population.

NET REPRODUCTION RATE

	1905–1910	1935–1940
Rural farm	2,022	1,661
Rural nonfarm	1,499	1,150
Urban	937	726

During the whole period covered the urban population was not maintaining itself, while the rural-farm, though declining, was providing the greatest increase. Of the various regions the South had the lowest urban rate and much the highest rural-farm reproduction rate.

Since 1940 birth rates have increased sharply. How they have affected the different parts of the population cannot be measured accurately until the results of the 1950 Census become available. Sample surveys indicate the trends. The number of own children under 5 years old per 1,000 women 15 to 49 years old is as shown in the accompanying table.[4]

	Number of own children under 5 per 1,000 women 15–49 years old		
	1940	1947	1949
Rural farm	618	641	631
Rural nonfarm	516	568	632
Urban	369	477	503
Total, United States	452	526	555

[2] *Ibid.*, p. 107.

[3] Sixteenth Census of the United States, 1940, Differential Fertility, 1940 and 1910, Table 7.

[4] Population Characteristics. Current Population Reports, Series P-20, No. 27, U.S. Department of Commerce, Feb. 3, 1950.

The greatest increase has occurred in the urban group, and but little in the rural farm population.

Population Migration. Historically the population of the United States has had a considerable degree of mobility. The westward surge of population as the country was being settled has been traced in the early chapters. During the 1920's large numbers of persons in the South, particularly Negroes, moved to Northern states. The Dust Bowl era of the 1930's resulted in many families abandoning the area. The most consistent type of movement is the rural-urban migration, or movement between country and city. Large numbers of persons move in each direction, but the net movement is from the farms to the city. This fact accounts for the declining farm population despite the highest birth rate and the growth of urban population with a birth rate which until recently has been below a maintenance level.

During the period 1922 to 1929, the net movement to cities was about 700,000 a year. The depression checked this movement, and in the years 1930 to 1932 slightly more people moved to farms than to the city. The cityward movement was resumed after 1932 but remained at a slower pace through the 1930's. The advent of World War II with its greatly stimulated industrial activity raised the movement to cities to a very high level and reduced the extent of movement to farms. The heaviest movement during this period was from the rural areas of the South.

In some respects this migration is selective because a majority of the persons moving to urban centers are between the ages of 15 and 25, with few over 45. Women migrate in greater numbers and at a somewhat earlier age than men. That the most desirable of the farm youth migrate to the cities, as is sometimes claimed, appears to be without foundation; rather the cities attract some of the most and least desirable, but the country retains the great middle group.[5] This addition of large numbers of persons just entering the period of productive work and establishing families represents a great social and economic gain to the cities. It represents a loss to the country inasmuch as the cost of rearing and educating these people has been borne there. On the other hand, the country could not provide profitable employment for all the children born and reared there.

Less is known regarding those who move from cities to farms. In general they are persons with previous farm experience and are older than those moving to cities.[6]

Age and Sex Composition of the Farm Population. The combined effects of the rural-farm birth rates and the rural-urban migration result in a farm population with a large proportion of children, a low proportion

[5] T. Lynn Smith, The Sociology of Rural Life, p. 188.

[6] *Ibid.*, p. 191.

of persons 15 to 45 years of age, and a large proportion of aged persons. As compared with urban centers the farm population has a smaller proportion of its numbers in the working-age group, a higher proportion of children to educate, and more aged people to care for. Fewer older people move from farms to towns than formerly because of improved living facilities on the farms. The farm population consists largely of native-born people since the foreign-born tend to settle in urban centers.

Two other types of migration should be mentioned, although they have little direct effect upon the distribution of the whole population. The first is the movement of large numbers of tenants and sharecroppers from farm to farm. This movement obviously creates a situation of instability which affects not only those families but also the character of the communities where they live and of the organizations and institutions maintained there. Even more unstable is the group of migratory workers who shift from one agricultural area to another in response to peaks of labor demands in the production or harvesting of specialized crops. For the migratory workers there are no community attachments; living conditions, employment, and educational opportunities are limited and insecure.

The Farm Family

The family is the fundamental unit of American society. It has its beginning in marriage which in rural areas is closely related to distance, race, nationality groups, religion, and social class.[7] The family is charged with a number of social functions among which are the following: reproduction of the species, care of children during dependency, education and training of the young, helping them get established, providing recreation and protection, and caring for aged and incapacitated members.[8] How well these social functions are performed depends in no small part upon the economic function of providing an adequate income.

That farm families perform these functions generally better than other groups is because of the more favorable conditions. The farm family lives in close relationship to its work, which calls for the cooperation of all its members and a part of its living depends directly upon the family's own efforts. To some extent the family is isolated from distracting influences. While this situation provides fewer outside social contacts, life is less superficial and closer family relationships are established. On the whole farm families are larger and there are fewer broken homes than in the rural-nonfarm or urban groups.

These more favorable conditions are by no means universal among farm families. Many fall in the low-income groups; housing is often inadequate

[7] Nelson, *op. cit.*, p. 297.

[8] Smith, *op. cit.*, p. 373.

and overcrowded; educational opportunities may be meager; where suitable equipment is not available hours of work may be long and arduous; and isolation greatly reduces social contacts. Thus does farm life present a wide range of living conditions from the best to the worst. Much of the below-average conditions arises with that marginal element of the farm population which lives largely on a subsistence basis.

Urban conditions are exerting an increasing influence upon farm families. The increased use of automobiles, radios, telephones, and good roads, and the movement toward school consolidation have tended to widen the interests and contacts of rural people, and as a result the differences between rural and urban modes of life are no longer as pronounced as formerly.

The increased use of electric power and mechanization has taken much of the drudgery out of farm work. Farm families now have more leisure time than formerly for participation in social activities.

The Life Cycle of the Farm Family. Because of the close relationship between the farm family and its occupation, the life cycle of the family is significant. A cycle may be described in terms of the school periods of the children or in what the children can contribute toward the farm work. The former contains four stages: (1) the preschool family; (2) the grade-school family; (3) the high-school family; and (4) the all-adult family.[9] The latter also has four stages, but differs somewhat: (1) married but no children; (2) children in dependent stage; (3) children grown and self-sufficient; and (4) parents approach old age and children establish families.[10] Either type of cycle illustrates the dynamic character of families. In larger families these stages are likely to overlap to some extent, with the family frequently illustrating two stages at one time.

The young couple starting to farm, unless blest with an inheritance or substantial aid from their families, has a financial struggle to get established. The birth of children adds to their financial and social responsibilities, and a period of years must elapse before the children can be of material help on the farm. The greater emphasis on education lengthens the period in school but also provides vocational training in the high school. Those who remain in agriculture are often available for farm work for a few years while they are accumulating capital and experience to start on their own or to replace the parents upon retirement. Completion of the cycle requires 25 or more years. Any rural community demonstrates families in each of the stages of the cycle.

Rural-nonfarm families are in an intermediate position between farm and urban families with respect to the birth rate and size of family. Occu-

[9] J. H. Kolb and E. deS. Brunner, A Study of Rural Society, p. 213.
[10] Smith, *op. cit.*, p. 380.

pations represented are diverse and are less subject to family participation than work of farm families. Population density is greater, affording a greater amount and variety of social contacts. Villages include a high proportion of older persons because many farm families move to them on retirement. Families broken by death or divorce are relatively more numerous than in the open country.

Rural Communities

Before the days of good roads the contacts of farm people were limited to the families in the local neighborhood. Trips to the nearby towns were limited. The farmers' community center was located at a distance defined by the "team haul." The nearby towns still serve as trade centers. The rapid development of transportation and communication and of commercialized farming has made farmers even more dependent upon commercial lines to market their products and to obtain needed supplies, but has likewise broadened the area within which these contacts may be found. Villages and towns are thus brought into competition with each other and with larger centers within easy traveling distance. Under these conditions many of the old neighborhood lines have broken down; the smaller trade centers have become more specialized to serve the more immediate needs of farmers; the larger centers are now the focal points of most of the rural communities.

The rural community usually includes the village or town trade center and the adjacent area within which the farm population uses the center for marketing and as a source of supplies and financial facilities. A well-developed center also offers educational advantages—schools and a library; professional services of doctors, dentists, and lawyers; communication facilities through mail service, telephone exchange, and newspaper; recreation and welfare centers; and religious organizations.[11] Not all community centers, of course, can or do provide all of these kinds of facilities. Smaller centers usually can provide only a part of them, and even these do not arise automatically. They depend to a large extent upon the voluntary efforts of leaders and citizens who study the community's needs, develop a spirit of cooperation among the various groups in the community, and undertake a long-range program to realize the measures needed.

Illustration of Community-improvement Programs. How such a program of community betterment can operate is illustrated by the programs developed by five central Illinois communities with village centers ranging in population from less than 500 to about 1,900. In each case local leaders with some outside assistance aroused the interest of the community and enlisted the cooperation of local organizations. The various suggestions

[11] Kolb and Brunner, *op. cit.*, pp. 301, 327.

for improvement were carefully sifted, discarding the impractical ones and undertaking a definite program. The record at the end of two years for two of the communities follows.[12] In the smallest community, "Every street blacktopped; plans in the making to blacktop every road in the township; consideration being given to a water softener project and sewer system; village and rural schools merged into a community consolidated district; possibilities of joining nearby towns in a recreation program are being explored." In another community whose center had a population of 1,300,

> New water plant; drainage outlets being improved; street blacktopping being continued; committee raising funds for community center; adult classes and private kindergarten added to school; new unit school district voted; tennis courts to be established; community band organized; lights installed on football field; softball league organized; new businesses include cabinet shop, electrical shop, locker and cold storage plant, slaughterhouse, welding shop, bakery, seed corn drying plant.

These programs contribute to the trade, educational, recreational, and esthetic interests of town and country alike. Thus do these communities look forward to growing rather than shrinking.

The rapid expansion of cities has given rise to two types of centers which, though located in rural areas, do not become parts of rural communities. One is the industrial village whose interests are confined largely to an industrial enterprise such as a textile mill or a mine which employs most of the workers of the village. In such cases the residents of the village have little in common with the people in the adjacent country and community organization is not favored. The other is the expanding suburban area which has spilled over the corporate limits of the urban center into the rural areas. Such developments have been numerous since the war as a result of efforts to provide housing for city workers in locations removed from the city's congestion. Residents of such areas depend upon the city rather than the farm areas and are characterized by urban rather than rural standards.

Rural Schools

The one-room school has long been the symbol of education in rural America. From the earliest settlements schools have been an integral part of rural life and have provided the basic formal training for children. Because American farmers, unlike those in some other countries, live on their farms, the district arrangement was generally adopted to establish schools within reach of all families.

[12] H. Clay Tate and Alvin T. Anderson, Community Survival. Illinois Agricultural Extension Service Circular 633, 1949.

The School District. The school district, often designated as the administrative district, includes the area under the administration of one school board. The school board which is an elected body levies local taxes for the support of the schools, provides and maintains the school buildings and equipment, and employs the teachers. The basis of school-district organization varies greatly from state to state. In 1947 one small state, Delaware, had a state organization which administered all the schools except one city and 14 special districts. Twelve states, mostly in the southern half of the country, had districts based upon the county as a unit. Nine states located mostly in the northeastern part of the country used the township as a basis. The other 26 states were organized on the district basis.[13] In these 26 states the average size of school districts was 18 square miles, although those in some states averaged less than 5 square miles; in states on a township basis the average was 28 square miles; and in states on a county basis, 377 square miles per district. In some states on the district basis a majority of the districts represent a dual system in which high-school districts are superimposed upon elementary districts. Of the 26 states on a district basis the number of school districts in 1942 were approximately as follows: 3 states had less than 1,000 districts; 9 had 1,000 to 2,500; 5 had 2,500 to 5,000; and 9 had more than 6,000. The greatest number of districts, 12,138, was in Illinois.[14]

Attendance Areas. An attendance area is the territory which is served by one school center. Under the district form of organization the attendance unit usually covers the same area as the administrative district; under larger districts, such as the township or county, there may be a few or many attendance areas in a district. Under the various types of districts the typical one-room schools have been decreasing in numbers. In 1909–1910 such schools numbered 212,448 and represented 80 per cent of all school buildings in use; by 1941–1942 the number had decreased to 107,692 which was 48 per cent of the buildings in use.[15]

One-room Schools. One-room schools are outmoded on the basis of present educational standards. In many cases the average enrollment is too small. The smaller numbers reflect fewer families in the district because of larger farms and less hired help and fewer children per family. The school therefore affords little rivalry in classes and but limited social contacts. As compared with urban schools the teachers in general have less preparation and less experience and are paid lower salaries, the rate of

[13] Merle R. Sumption and Harlan D. Beem, A Guide to School Reorganization in Illinois, p. 26. University of Illinois Education Research Circular 59, 1947.

[14] Statistical Abstract of the United States, 1947, p. 371.

[15] Nelson, *op. cit.*, p. 384.

teacher turnover is greater, and the school term is shorter. The curriculum is necessarily limited, and libraries are meager or nonexistent. Taxes for school support often place a heavy burden on the property in the district, yet the cost per pupil is frequently very high for the quality of training provided.

It is obvious that if these faults are to be corrected, larger administrative districts must replace the many small districts and pupils must be brought together from larger attendance areas. In areas of sparse population greater concentration may not be feasible. In some other areas larger districts may be set up to improve administration, but existing schools must serve until the construction of all-weather roads makes transportation of pupils possible. Even where population density is adequate, moves toward centralizing schools are frequently resisted. Some farmers have an emotional feeling toward the local school; the children must go farther from home usually to a town or city; the subjects taught and the control of the school are farther removed; the influences in these larger centers are unknown; and a different plan may raise taxes.

Trends in School Organization. The trend toward larger units and more improved school systems is unmistakable, but the time of such movements, the rate of accomplishment, and the means by which the changes are effected vary greatly from state to state. Some are more effective than others. Sumption and Beem conclude, "In all cases the history of educational reorganization indicates that adequate and sustained programs in school reorganization have been developed in the main by two procedures employed separately or in combination. They are reorganization by state fiat . . . and reorganization brought about by establishing financial incentives for desirable reorganization."[16]

Many writers note "a tendency for districts, once reorganized, to persist." It is desirable, therefore, that plans be developed in conformity with a sound educational program. To further this objective Sumption and Beem set up guideposts of desirable characteristics for administrative districts and attendance areas for Illinois conditions. In Illinois the reorganization plans developed by county committees were submitted to popular vote in the areas affected. While the program is far from completion, the developments are of interest not only because the movement was long overdue, but also because of the progress made. In 1944–1945, school districts numbered 11,955; in 1949–1950 the total was 4,950.[17] The 7,005 administrative districts eliminated was a reduction of 7,016 elementary

[16] Sumption and Beem, *op. cit.*, p. 28.

[17] University of Illinois, Bureau of Educational Research Report, Sept. 1, 1949.

districts and 204 high school districts and an increase of 215 unit districts which embrace grades 1 to 12.

The results to be secured from a reorganized and consolidated system will vary, of course, with how well the plans are made and carried through. Larger enrollment and attendance, separated on a grade basis and equipped with laboratories and libraries, afford opportunities for group and project work. Improved administration and supervision and adequate financial support lead to well-trained teachers, adequately paid, and to a broadened curriculum suited to a well-rounded training. At the high school level vocational subjects in agriculture and other lines may be introduced. For some districts the tax costs may be higher and for others lower. The over-all costs for schools in most areas should not be increased, but greater returns should be secured for the funds spent.

There is a growing trend to shift a larger part of the cost of school support from local to state sources. The objective is to equalize the tax burden among districts of different taxpaying ability; the idea being to support schools where the children are but to derive income for this purpose where the wealth is located. Supporting this trend is the fact that half the children reared in the country migrate to urban centers which in this way can help to defray the cost of educating the product which they will receive.

Rural Churches

The rural church is like the one-room rural school in that both are institutions of long standing and both are in need of adjustment better to fit the needs of modern life. While the school is a public tax-supported institution whose changes are subject to modification by the action of political groups, the church is voluntary as to attendance and support.

The religious sense is deeply rooted in the human race although its expression takes many different forms. The Christian religion, which is most prevalent in the United States, is essentially a belief in God, from which arises a moral law and a recognition of the spiritual dignity and worth of the individual.[18] Religion is based upon the faith of the individual. Its effects are to provide a feeling of security and certainty, a basis for moral values, a guide to character building, an interest in the welfare of others, and a content for religious education. Its influence therefore is both personal and social.

Rural people appear to lean more to the personal side of religion than do those in urban groups. Their work is more closely associated with natural forces; their lives are less complex, and they have fewer contacts.

[18] John Foster Dulles, The Church: Foundation for World Order, *Presbyterian Life*, Vol. 2, No. 21, Oct. 29, 1949, p. 6.

These influences are reflected in a greater acceptance of religious tenets, a less critical attitude, and less tolerance.[19] These same characteristics have also resisted change. As social institutions the influence of rural churches is far-reaching. Except for the public schools no other rural social institutions have as much capital invested and as much current income, employ as many people, and enlist as many in its activities.[20]

Condition of Rural Churches. Rural churches, including those in the open country and in villages under 2,500 population, number about 175,000, most of which are Protestant, the Catholic being located for the most part in the city.[21] This number is excessive in relation to the rural population, and particularly so in the thickly settled areas of the East, South, and Middle West, although some thinly settled areas of the West have too few churches. Numerous causes contribute to the prevalent situation of too many churches. Most rural churches were established in the horse-and-buggy days; hence the attendance area was limited by the mode of travel. Churches have long been divided along denominational lines which often was a reflection of the rural spirit of the frontier. People settled areas and early established churches, thus expressing the ideal of "freedom" of worship. The many denominations frequently resulted in a duplication of facilities. Racial groups, such as the Negroes in the South, and nationality groups of immigrants established their own churches. Moreover, the changes in birth rates and the migration of population, especially that from rural to urban areas, have affected the ratio of churches to population.

The term "rural church" is, of course, very broad and covers a wide diversity of situations. The denominations involved range from the very conservative or puritanical to the highly emotional or evangelistic type. Individual congregations vary greatly in membership, financial support, quality of leadership, and programs of activities. Some are highly successful in all these respects. Generalizations can apply only to the conditions which are most commonly found.

The general overchurched situation means that many congregations are too small to be effective; they have limited financial support; and often a competitive situation occurs in villages in which several churches struggle to exist where one would be adequate. In many cases paid leadership is lacking; in others the services of a leader are divided between two or more churches; many leaders to make a living have to work part or full time at other occupations; and many who devote full time as leaders are inadequately paid. As a result the programs of many rural churches fall short of

[19] Paul H. Landis, Rural Life in Process, p. 376.

[20] Kolb and Brunner, *op. cit.*, p. 513.

[21] Landis, *op. cit.*, p. 381.

the needs of their membership and of the community. The training required for the ministry in some denominations is inadequate; in others which require college and seminary training, the rural church frequently is used as a steppingstone to a higher paid urban church. Under these conditions it is no wonder that many rural churches barely exist and that many fail.

Steps toward Improvement. The church has a real function to perform in the rural community. It should not only minister to the spiritual needs and provide religious training for its membership and their families, but also should provide social contacts and opportunities for social services on a broader scale. It should provide leadership in enterprises directed toward community development. Its sphere of influence extends not only to those who grow up and settle in rural areas, but also to the half of rural youth who migrate to urban life and employment.

To retain and develop these essential functions under the conditions which are all too common is a problem. The solution here as with the one-room school appears to lie in consolidation into larger units. But such a move involves difficulties. Churches are voluntary organizations; in most denominations there are ties to larger overhead units; the emotional attachments to the church and cemetery are not easily relinquished; and the doctrines, modes of worship, and characteristics of church work do not appeal in the same manner to all groups.

Despite these difficulties progress is being made. Many church groups are aware of the need for providing better church facilities for rural people. Rural pastors are taking a wider interest in farming practices, land tenure, soil conservation, and community development.

From the viewpoint of church organization, unions of two or more congregations within a single denomination are quite common. Some unions involve congregations of different denominations which unite for local purposes but retain greater or less connections with their overhead bodies. In some cases the union is formed with no denominational ties. In other cases the so-called "larger parish" is set up on a larger community basis under the direction of a council with a broad program under a somewhat specialized staff.[22] These types of adjustment are made at the local level. During recent years considerable attention has been given to church union by some of the larger denominations.[23] Action at the higher levels would simplify the problems of union at the local levels but is not likely to proceed rapidly enough to offer relief in the near future to the many hard-pressed rural churches.

[22] Wilson Gee, The Social Economics of Agriculture, pp. 665–667.

[23] Henry Sloane Coffin, Are Denominations Justified? *Presbyterian Life*, Vol. 3, No. 2, Jan. 21, 1950, p. 18.

Social Contributions of Other Organizations

The close relationships of the farmer's business and his personal and family life are further shown in the organizations to which he belongs. While the objectives of such organizations are primarily educational and economic they contribute also to social ends. Thus the Extension Service in Agriculture and Home Economics functions through local groups at adult and youth levels. The farmers' organizations, the Farm Bureau, the Grange, and the Farmers' Union, include social activities in varying degrees in their programs. Even the cooperative organizations through which farm products are marketed, farm supplies are purchased, and financing is carried on provide educational and social contacts. The history and activities of these organizations have been traced in earlier chapters. Thus do the social, educational, and economic phases blend to supply a broader and more complete life for rural people.

Summary

Farm life has a human as well as an economic aspect. The number of people on farms increased up to 1910 and has declined since then. The proportion of farm people to the total population has declined steadily and now is less than one-fifth of the total. Although their birth rates have declined, the farm population still produces twice as many children as are needed for replacements. The surplus migrates to the urban centers as young adults, most between 15 and 25 years of age.

In general the social functions of family life are better maintained on the farm than elsewhere. The conditions of farm family living represent a wide range with urban contacts exerting an increasing influence. Community development embracing mutual interests of village centers and surrounding farming areas are replacing the narrower neighborhood lines and are expressing the mutual interdependence of these groups. Through definite programs of improvement some communities are providing the means for a stable rural life.

The one-room school, once the symbol of rural education and still prevalent in more than half the states, is inadequate for present-day needs. The trend is slowly toward larger administrative districts and with larger enrollments on a graded basis, better equipment, a broader curriculum, and a better trained supervisory and teaching staff.

The rural people of today have inherited an unhealthy condition of too many churches, too limited support, insufficient and inadequately trained leadership, and restricted programs. A strong program under progressive leadership is needed to supply the religious and social needs of individuals and the community.

Rural life has made great strides along economic lines. It has maintained the stability of family life. Progress in social aspects, including educational and religious institutions, has lagged far behind in many parts of the country. Fortunately in some areas rural people have forged ahead and have provided more fully for these needs. In so doing they have set up patterns by which the social aspects may more readily keep pace with the economic, and jointly may supply a well-rounded rural life.

QUESTIONS

1. Differentiate between farm, rural-nonfarm, and urban population.
2. What are the relative numbers in these population groups?
3. How do they differ in composition? Why is this so?
4. What proportion of children raised on farms remains in the country?
5. How would agriculture be affected if all of them remained on farms?
6. Do we have too many farmers now?
7. What becomes of the rural youths who leave the farms?
8. What is a rural community? What common interests does it represent?
9. What conditions tend to enlarge community boundaries?
10. In what ways may communities be improved?
11. In what ways have rural-school opportunities been limited?
12. How satisfactory are the rural schools in your home community? What type of organization do they have?
13. What changes have gradually been taking place in the organization of rural schools?
14. What specific problems have confronted rural churches?
15. To what extent are these problems being solved?
16. In what ways has farm life improved during the past quarter century?

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Chapter 18. AGRICULTURAL RELATIONSHIPS

American farmers are in the business of producing. Naturally they like to carry on production at full stride, to sell their products at satisfactory prices, and to enjoy a good level of living. Such an ideal, of course, cannot be accomplished by farmers alone, for as we noted in the opening chapter, the fortunes of agriculture are tied closely to those of the country.

That the welfare of agriculture is fundamental to that of the country has been held by many persons. This viewpoint is supported by the fact that roughly one-fifth of the population and one-seventh of the labor force are on farms. The products of the farms are essential to supply the nation's need for food, clothing, and other materials. These products provide a sizable share of the volume of manufacturing and trade, and the farm population, if prosperous, provides a market for the products of other groups. From this viewpoint the nation may be pictured as a planetary system in which the other parts rotate around the agricultural center. But is this the true picture? What are the relationships of agriculture to the remainder of the economy? It is the purpose of this chapter to explore more fully these relationships and to point out some of the problems still awaiting solution.

Diverse Interests within Agriculture

Frequent reference has been made to farm and nonfarm groups. A discussion of relationships demands more precise definitions. The farm group is by no means homogeneous. As indicated earlier, our agriculture has developed well-defined areas of regional specialization–the Wheat Belt, the Corn Belt, the Cotton Belt, the Range areas, the Dairy areas (Fig. 6). The interests of the farmers in these areas are diverse. The Corn Belt farmer wants to sell grain at a high price, but the eastern dairyman wants to buy it as cheaply as possible. The same holds for feeder cattle raised on the range and sold to the Corn Belt farmer for finishing. Thus conditions that favor farming in one area may be detrimental to those in other areas and in other types of production. In reality agriculture is composed of several groups of related and to some extent overlapping industries.

Of the 5.8 million farms in the country we have seen that 3.3 million

produce nearly all of the products that are marketed. The other 2.5 million represent many kinds. Some are mainly rural residences; others produce largely for family consumption; some are part-time farmers and depend largely on employment in other lines; while many are small-scale units operating under handicaps of too limited resources. While many of these noncommercial farmers are concentrated in the Appalachian Highlands, the Ozark Mountains, the cut-over areas of the Lake states, and the eastern part of the Cotton Belt, and others are adjacent to city populations, some are widely distributed in all states. From the standpoint of production they lack adequate resources. Yet land, the most important resource they lack, is not available unless that in the hands of other farmers were reduced; and if enough land were available the problem of finding adequate outlets for farm products would be complicated still further. Measures to assist agriculture on a price basis afford but little help to these groups of underprivileged farmers.

The aspect of efficiency also should be noted. Farm-management studies normally show wide differences in earning capacity among farmers under similar conditions. While studies of this kind have been emphasized among farmers who produce primarily for the market, a considerable number have included subsistence and part-time farmers. In all ranges of resources from the best to the poorest the differences in managerial ability in using those resources are apparent.

The question of whether farmers should be subsidized at a level which keeps the most inefficient 25 per cent in agriculture or whether something better for these people and for agriculture could be devised was addressed by a farm journal to a number of recognized farm leaders.[1] The question did not clearly distinguish between inefficiency and lack of resources, and some interpreted it each way. The replies varied greatly from a decisive "no" to suggestions for increasing the efficiency of such farmers or for making them less dependent upon agriculture by creating more job opportunities outside agriculture. From a social viewpoint the opportunities of farm life were generally conceded.

Thus the question of who is to be included when we talk of agricultural issues is not clearly defined. Some issues are regional in character; for example, the legislation to repeal the Federal taxes on margarine favored farmers in areas which produce cotton and soybeans and was adverse to those in dairy areas. Programs which affect income through raising or maintaining prices of farm products favor farmers who sell the products affected. Hence commercial farmers with adequate resources receive the chief benefits while those who market little, either because of inefficient methods or lack of resources, have little to gain. Issues which affect rural

[1] Too Many Farmers? *Farm Journal*, Vol. LXXIV, No. 5. May, 1950, p. 31.

social conditions or the levels of living of farm people of course apply to the entire farm population. To construct situations which promise to be generally helpful amid the variety of conditions is not easy. Some broader objective is needed.

Agriculture and Business Groups

The nonagricultural population may be classified in many ways. For our purpose the census classification of employment by broad industry groups is useful since farmers sell most of their products to these groups and in turn buy their processed supplies from them. These groups obviously include only the employed part of the population (Table 83). While

TABLE 83. PERSONS IN THE EMPLOYED LABOR FORCE, BY INDUSTRIES, UNITED STATES, 1940*
(In Millions)

Industry	*Total Labor Force*
Manufacturing	11.8
Agriculture, forestry, and fisheries	9.1
Wholesale and retail trade	8.2
Personal services	4.4
Professional and related services	3.5
Construction	3.5
Transportation, communication, and public utilities	3.4
Government	1.9
Finance, insurance, real estate	1.5
Mining	1.1
Business and repair services	1.0
Amusement, recreation, and related services	0.5
Industries not reported	2.1
Total	52.0

* Source: Statistical Abstract of the United States, 1947, pp. 191–193.

these figures are for 1940, the proportions of the various groups probably have not changed greatly. At that time the farm population made up 22.9 per cent of the total population, and the employed labor force in agriculture was 17.6 per cent of that for the country. The subsequent growth of the entire population and the reduction in the farm population have reduced the proportion living on farms to less than 19 per cent in 1949.

It is apparent that agriculture has contact with all of the other industry groups through the exchange of goods and services. A rough measure of the extent of the contribution of agriculture to manufacturing may be secured. Of the 20 major groups[2] of the manufacturing industries as classified in the Census of Manufactures, five derive their raw materials almost wholly from agricultural products. These groups include food and kindred

[2] The 20 major groups are subdivided into 450 subgroups.

products, tobacco, textile and mill products, apparel and related products, and leather and its products. In addition the raw materials for other products such as soap, vegetable and animal oils, and brooms originate on the farm. The number of wage earners employed in these manufacturing lines in 1947 was 31.5 per cent of the total in manufacturing, the wages paid to them were 26.9 per cent of the total, and the value added by manufacturing was 29.8 per cent of the total.[3]

On the other hand, farmers depend upon the manufacturing industries for much of the supplies for the farm business and for family living. Important among these are agricultural implements, automobiles and trucks, motor fuels, building materials, fences, tile, hardware and tools, electrical equipment, household appliances, furniture, food, clothing and other textiles. In 1948 farmers paid out an estimated 18.5 billion dollars for farm operating expenses.[4] Roughly two-thirds as much was spent for family living. A large part of these sums, therefore, represented the farm market for the nonfarm groups.

The products manufactured from agricultural materials and those to supply the farmer's needs add to the volume of wholesale and retail trade. Transportation is necessary to move farm and processed products from place to place. In 1947 primary agricultural products accounted for 11.6 per cent of the revenue freight on all Class I railroads.[5] Had the articles processed from farm materials and the supplies for farm use been added, a much larger share would have resulted.

In the chapter dealing with marketing costs it was noted that the marketing costs of food products in general equal or exceed the returns to the farmer.[6] In other words the value of services rendered in marketing by nonfarm groups is as great as those of farmers in production. For cotton, wool, tobacco, and leather, the value added after the product leaves the farm is several times that paid to the producer.[7] Hence not only farmers but many other groups contribute to the final product.

Agriculture then is but one of many industries which make up our modern economy. While its products are essential so are the products and services of the other groups. Those who consider agriculture as the only fundamental part of the national picture fail to see the whole picture. The 10 to 15 per cent which agriculture contributes to the national income is significant. What happens in agriculture affects all the other groups and in turn is affected by them. This does not imply that the current basis for

[3] Statistical Abstract of the United States, 1949, pp. 932–942.

[4] Agricultural Statistics, 1949, p. 639.

[5] *Ibid.*, p. 552.

[6] Table 37.

[7] Tables 45, 46, 47, and 48.

exchange between groups is equitable but merely that we live in an interdependent economy.

Despite the fact that our agriculture has greatly expanded over the past 70 years, the proportion which agricultural raw materials make up of all manufacturing has steadily declined (Table 84). Total farm population and farm employment have declined since 1910. In general agriculture is expanding less rapidly than the nonagricultural parts of the nation. This should occasion no surprise. A new country with ample resources develops its agricultural resources first; later as population increases and capital accumulates, industries expand more rapidly than agriculture.

TABLE 84. RELATIVE POSITION OF MANUFACTURING INDUSTRIES USING AGRICULTURAL RAW MATERIALS CHIEFLY*

	Per cent of all manufacturing industries			
	1879	1904	1929	1947
Number of wage earners	42.5	38.1	33.1	31.5
Wages paid	37.2	32.2	26.8	26.9
Cost of materials	60.4	52.9	41.1	
Value added by manufacture	41.3	37.3	28.9	29.8
Value of products	53.4	46.3	35.5	

* Data for 1879–1929 from Louis H. Bean and Arthur P. Chew, Economic Trends Affecting Agriculture, U.S. Department of Agriculture, 1933; 1947 from Statistical Abstract of the United States, 1949, pp. 932–942, and Release MC-201, U.S. Census of Manufactures, 1947.

Technological developments in agriculture, many of which are closely related to industrial developments, increase the production per man, hence reduce the number of people needed to produce farm materials (Fig. 5). Thus in 1880 each farm worker in the United States supplied 6.42 consumers at home and abroad.[8] By 1900 this figure had increased to 8.05; by 1930 to 10.96; and in 1947 to 14.61. The accumulation of surplus farm products indicates that still fewer people are needed in agricultural production. These long-time occupational adjustments by which the farm population and farm workers make up a smaller proportion of the totals for the nation reduce farmers' direct voting strength, their representation in Congress, and their ability to compete with other groups but do not impair total productive capacity.

Individual Farmers versus Big Business. Agriculture, as indicated earlier, is made up of a very large number of relatively small units. The corporate form of organization on a large scale has not been well adapted to the

[8] Farm Production Practices, Costs, and Returns, p. 73. U.S. Department of Agriculture Statistical Bulletin 83, 1949.

conditions of agricultural production. Of the other occupational groups listed in Table 83 only personal and professional services are composed predominantly of units in which the organization is that of individual proprietorships. Some other occupational groups, of course, contain large numbers of such units, particularly in retail trade which in 1947 accounted for more than 46 per cent of the total number of operating firms in industrial and commercial lines (Table 85). A large part of the industrial

TABLE 85. NUMBER OF OPERATING FIRMS IN INDUSTRIAL AND COMMERCIAL LINES, 1947*

	Number of firms (thousands)	Number of farms per firm†
Manufacturing	318	19
Wholesale trade	180	33
Retail trade	1,755	3
Construction	276	22
Transportation, communication, and public utilities	229	26
Finance, insurance, real estate	303	20
Mining	29	206
Service industries	727	8
Total	3,817	

* Statistical Abstract of the United States, 1949, p. 493.

† Number of farms 5,970,000 from *Farm Income Situation*, July-August, 1949.

and commercial business of the country is carried on by large and powerful business units. In manufacturing industries, for example, establishments with 1 to 9 employees comprised 48.6 per cent of all manufacturing firms in 1947, but they had only 3 per cent of the employees and accounted for only 3 per cent of the value added by processing.[9] The firms which had 100 or more employees represented only 10 per cent of the total but had three-fourths of the employees and accounted for a like amount of the value added. Of these larger firms those with 1,000 or more employees were less than 1 per cent in number, but had one-third of the employees and contributed one-third of the value added.

That large-scale business units are common to many kinds of industries is indicated by average net assets by industry groups as reported by the National City Bank of New York (Table 86). Net assets for firms in these groups averaged from 6 million dollars to 62 million dollars. While these leading companies make up less than 1 per cent of the industrial and commercial firms of the nation, they represent almost half of the total assets of all American corporations.[10]

[9] Statistical Abstract of the United States, 1949, p. 929.

[10] The National City Bank of New York, *Monthly Letter on Economic Conditions, Government Finance*, April, 1950, p. 39.

Farmers have a real interest in the tendency of American business enterprises to develop on a large-scale basis. Much of the equipment used on farms and in farm homes is available within the reach of farmers only because of large-scale production made possible through the combination of large amounts of capital, technical skill, a highly specialized division of labor, and trained management. Because of such equipment and widespread service activities, farm work is more productive and less arduous. Technological developments in industry have widened the market for the farmers' products, while employment and payrolls have enabled the workers to buy and use the final products.

TABLE 86. BOOK NET ASSETS OF LEADING CORPORATIONS, JAN. 1, 1949*

Industry	Number of companies	Av. book net assets† (millions)
Manufacturing	1,710	$29.6
Trade (wholesale and miscellaneous)	187	23.3
Construction	20	6.1
Transportation	239	62.2
Public utilities	284	41.4
Finance	682	16.0
Mining	109	15.6
Amusements and service	91	9.1
All industries	3,322	$28.7

* The National City Bank of New York, *Monthly Letter on Economic Conditions, Government Finance*, April, 1950.

† Net assets are based upon the excess of total balance-sheet assets over liabilities; the book values are far below present-day values.

By contrast, however, the farmer's business and that of other individual proprietors in industry groups appears very small indeed. He and his family must provide the management and a large part of the capital and labor with which to operate. It is because of their unequal competitive situation as individuals that farmers have set up national organizations which could study their problems and express their interests on a broad group basis. It is for this reason that through their organizations they have organized cooperatives by which they could sell their products and buy their supplies on a larger scale basis. It is for this reason also that they have demanded governmental assistance to curb other groups when they felt their competition was unfair and to advance their own interests.

Agriculture and Organized Labor

Farmers' income from sale of products and their outlays for purchased goods are influenced by labor costs in other industries. In many lines a large

part of the labor force has been organized into labor unions. These groups include a part of those listed above under industrial and commercial groups for it is from their workers that the labor unions draw their membership. To date relatively little effort has been made to enroll farmers or their employees in labor unions. The effects of union activities upon agriculture, therefore, are mostly indirect but nonetheless important. The payment made to workers for their services in producing and assembling raw materials, in processing them, and in distributing the finished products represents a major part of the total cost. While total union membership is less than one-third of the total nonagricultural labor force, the strategic position which unions hold in major industries has much influence in determining wage rates and working conditions. Since the war labor unions have gained marked advantages year by year in higher wages or other benefits or both. These higher labor costs have been reflected in the rising costs of products needed in farm production and family living. As consumers farmers have shared the inconveniences of limited supplies or services because of work stoppages to enforce demands. On the other hand, higher wages, if not offset by loss of income while on strike, provide greater purchasing power, some of which is spent for farm products.

Because of closely knit organizations labor unions are able to exert a strong political influence in their own behalf. Such issues frequently come into conflict with those of farm groups.

Agriculture and Consumers

Of great significance to agriculture is the very large but unorganized group of consumers. This group includes the whole population of the United States and many people in other lands. Here is further overlapping, for the employed members of the consumers' group include both the groups of occupational workers and the labor-union membership discussed above. Farmers, too, consume a portion of their own products, some directly on the farm and some exchanged between farmers, or bought back after processing.

In the chapter dealing with demand for farm products, illustrations were given of the effects of different levels of income upon consumption of food products. Consumers, of course, desire to supply all their wants as fully as possible. Those for food may be increased to a limited degree by consuming more food and by changes in the diet, but wants of other kinds tend to expand more rapidly than income. Decisions must be made as to which wants will be satisfied and these individual decisions of millions of consumers, when expressed in action, furnish a guide for all kinds of

production. During the last two decades the operation of this guide has been greatly impeded by governmental actions designed to render assistance to certain groups.

It is apparent that the interests of all these groups, agricultural, industrial, and commercial, organized labor, and consumers, are not only diverse but in some cases the interests of some groups coincide with those of others, while in other cases they are conflicting. Further, within the various broad groups there is competition among the subgroups, firms, or individuals who compose them. The economic objective is plain. Each business unit desires to secure the largest possible advantage for itself, and frequently business units join forces to secure even greater advantages than could be had separately. Mere size is not an evil but frequently big businesses have used their size and power to take advantage of others. The last hundred years of our national history is replete with the struggles against monopolistic power. In such struggles the unorganized consumers and small-scale units in both industrial lines and agriculture are the forgotten people. "Farmers are little folks in an age of great combinations." When abuses have become sufficiently acute, governmental action has been invoked to protect the public interest. Thus the Federal government is the final group to be considered.

The Role of Government

Government, at least in theory, is the organized arm of all the people to promote and protect their welfare. It should provide for fair play, protect the public interest when conflicts arise between groups, curb monopolistic practices and other abuses, and assist in setting up policies to promote harmony between groups. It should serve the public interest through aiding full employment and the constructive use of resources. It should provide services for the public good, education, health, roads, and care of unfortunates. And in all these activities it should encroach as little as possible upon the freedom of its citizens.

In performing its functions of writing the rules of the game and acting as umpire, government must become a participant in many economic activities. It collects huge sums in taxes; it spends these sums and often more for wages and salaries of employees, purchase of materials, building public improvements, relief, and a host of other things; it enforces many regulations on business; and it shapes the credit policies. These and many other activities of government affect the welfare of many groups within the country.

It is natural then that the groups which are affected should endeavor not only to take advantage of conditions existing under the laws, but

also to influence the character of the laws to their advantage. This situation results in pressure groups, each of which professes to serve the public interest through promoting those legislative measures which it favors.

Pressure groups have influence because government is administered at the top levels by men who belong to a political party which owes support to many varied interests. A political group comes into power because it makes promises which attract support, and it remains in control so long as its policies retain sufficient support to keep it in power. In practice the ideal of the public interest is likely to be warped by the conflicting interests of the many pressure groups that make up the public. In this respect agriculture is no exception, although it frequently presents several rather than a single point of view.

Because of its many kinds of functions and their broad scope the central government can do much to create a favorable situation for all groups. So far as it can encourage full employment at good wages, a fair exchange of goods and services among groups and individuals, and satisfactory living conditions without the imposition of undue burdens of taxation and regulations, all groups benefit. To pursue the general functions of government further would carry us too far afield. We need, however, to examine the relations of government and agriculture, the basis for assistance to agriculture, trends in development of assistance to date, what farmers want, and problems involved in methods of attaining these objectives.

Agriculture and Government

Agriculture has been the recipient of much governmental assistance over a long period, as was related in the chapters on historical background. Much of the land we farm came into possession of farmers directly or indirectly through the Federal land policy which began with sales and ended with distribution under the Homestead Act. The technological progress has stemmed in part from the results of the Morrill, Hatch, Smith-Lever, and Smith-Hughes Acts and the various later acts by which educational activities have been expanded through Federal assistance. Marketing of farm products has benefited greatly because of Federal standards as well as from research, regulatory, and informational activities. Farmers have been aided and encouraged to market their products and buy their supplies on a cooperative basis. Provision was made for agricultural credit when sorely needed. Aid to soil conservation has been available through various agencies. Tariffs, useless except for a few products, have been enacted. The most extensive reclamation and irrigation projects in the West have had direct aid. The weather-bureau reports are of particular value to farmers. Rural electrification has been extended to

most parts of the country. During the past two decades relief and price-support measures to agriculture have followed each other in rapid procession. These have been marked by the stabilization operations of the Federal Farm Board; production controls and the parity concept of the AAA of 1933; the soil-depleting versus soil-conserving aspects of the 1936 Act; the marketing controls and ever-normal granary storage of the Act of 1938; World War II high price supports, ceilings, and subsidies; the postwar Steagall measure; the flexible price supports and revised parity of the Act of 1948; and the Act of 1949 to postpone the flexible supports and amend parity to provide still higher supports.

What Conditions in Agriculture Merit Support? Production periods in agriculture range from a few months to a number of years. The resources used in production represent a high proportion of fixed investment so that changes to expand or contract take place slowly. For these reasons a high measure of stability is desirable. Agriculture, moreover, is peculiarly vulnerable to rapid changes in demand which accompany marked changes in employment, the general price level, and the national income.[11] This condition arises because farm production continues, and sometimes even increases, in the face of very low prices; prices of raw materials exhibit very wide price changes; and marked increases or decreaes in farm income are quickly translated into land values. From year to year production of a particular crop or products is subject to fluctuations because of natural conditions, while livestock production follows cycles of several years' duration. Many farmers are in the debtor class; hence they lose heavily when prices fall sharply and reap windfalls in inflation periods. Wide variations in farm income affect directly not only the farm population, but also closely related business groups. In view of these conditions some supports appear desirable particularly to lessen the effects of a prolonged and serious depression.

Trends in Support Programs. The farm programs which began two decades ago on a relief basis have taken various forms about the central theme of raising or maintaining the level of prices of farm products. These attempts have been far from static. An agricultural economist has set forth the following trends as applying to the programs to date as well as to some current proposals.[12] Government controls, as related to prewar, are becoming more extensive. Programs providing above-market prices tend to accumulate stocks whose sale involves political difficulties. Production controls adopted as emergency and voluntary become regular and com-

[11] William H. Nicholls, A Price Policy for Agriculture, Readings on Agricultural Policy, p. 166.

[12] T. K. Cowden, Current Trends in Agricultural Policy. *Journal of Farm Economics*, Vol. XXXI, No. 4, Part, 2, November, 1949, p. 800.

pulsory. Payments will continue to be made to farmers from the Federal treasury, though they may bear various names. The complex nature of allotments and administration calls for an increase in central control. Programs become broader to include larger numbers of minor products. As prices decline greater use is made of marketing agreements. The probable increase in use of export subsidies complicates the coordination between domestic and foreign outlets. Programs start on a low level but tend to increase. The political aspects of the programs are becoming more pronounced. Differences in treatment between large and small producers are likely to develop.

The majority of these trends have already been realized at least to some degree. Experience has shown too that high prices from whatever cause operate to increase over-all production but that low prices do not effect a similar over-all reduction. When reduction is forced the control patterns to date have proved too rigid to permit normal adjustments. Reduction in acreage does not provide a like reduction in products, and the idle acres are shifted to other crops. High supports limit domestic consumption and restrict foreign markets. The distribution of surpluses may materially aid the nutritional level of undernourished persons but is no adequate means of marketing the excess. Price measures offer little help to the large group who produce little for the market. The costs add materially to the country's tax burden.

What Do Farmers Want? Much of the extensive literature regarding farm programs is concerned with the means of attaining objectives rather than defining the objectives sought. Many individual farmers, looking at the immediate future, apparently want simply to retain the advantages gained by legislation and the war emergency. The president of a national farmers' organization with a longer viewpoint has expressed it thus: "Farmers want a fair opportunity to earn enough to enable their families to live comfortably, to enjoy in moderate degree the better things of life, to become educated according to modern standards, and to attain a measure of security for their old age."[13] An agricultural economist has summed up the objectives in two points: "(1) To improve the level of living of rural people, and (2) to maintain a large production per worker."[14] A Committee of the Association of Land-Grant Colleges and Universities reported, "The objectives of rural people are to obtain (1) income to provide a standard of living comparable to that of other large productive groups,

[13] Allan B. Kline, What the Farmers Want. *Annals of the American Academy of Political and Social Science*, Vol. 259, September, 1948, pp. 122–127.

[14] H. C. M. Case, What Do We Want in Farm Policy? *Illinois Farm Economics*, Nos. 176–177, January-February, 1950, p. 941.

(2) freedom of opportunity, and (3) that degree of security which will make for stability of family and community life."[15]

Any of these longer range objectives might be applied with equal fitness to any other group. They are fair objectives for the nation as a whole. Most groups interested in agriculture, whether farmers, educators, business executives, politicians, or consumers, would subscribe to them. The difficulty arises in finding some common ground as to methods of achieving these objectives.

All too often the practices followed have not been consistent with these objectives. The pressures exerted by many commodity groups within agriculture have quite consistently been on the side of maintaining or raising prices of farm products even when they were disproportionately high. The ideal of stability so ardently sought for involves resistance to boom periods as well as supports to offset depression.

Agriculture and the National Interest. The problems involved in the relationships of agriculture both internally and with business and commercial groups, organized labor, consumers, and government are but part of the total economic picture. Business groups and labor likewise have problems and have set up programs for accomplishing their objectives. They too seek the favor and assistance of government. To the extent that government can foster conditions which are favorable to all groups, the public welfare is advanced and the problems of each group are simplified. In this sphere fall such problems as relationships with other nations, the needs of national defense, how much government control we should have and how much should be left to private enterprise, fiscal policies, and fairness of tax burdens. These questions are far from finding satisfactory solutions.

Progress on Problems of Agriculture

Despite all the technological advances made within agriculture and the varied assistance of a generous government many questions still await solution. Some of these questions apply within the framework of agriculture, others to the relationships of agriculture to business groups and to consumers, and still others to agriculture and government.

Within Agriculture. Some progress has been made in resolving the differences in interests and opportunities among farm groups. Although the regional differences in production and marketing remain, much has been done through the farm programs and the national farmers' organizations to promote the national aspects of agriculture and the interrelation-

[15] Report of Committee on Postwar Agricultural Policy of the Association of Land-Grant Colleges and Universities, 1944.

ships among the various regions. The differences in economic opportunities and individual efficiency are of a different type. They are being constantly accentuated by an increasing technology which enables fewer farmers to produce the needed supplies of products. Technical training and assistance have been made quite generally available through vocational agricultural training in the high schools and on the farms through the Agricultural Extension Service. Limited credit facilities have been provided for low-income farmers. But neither training nor credit will suffice for those without a reasonable opportunity. To this end we need a strengthening of our rural pattern of education that those who remain in agriculture may be better equipped and those not needed on farms may be adequately trained and assisted to enter other occupations.

Agriculture as Related to Business Groups and Consumers. In dealings between agriculture and other business groups both the attitudes that prevail and actions are important. Agriculture has a responsibility to other groups to provide the supplies of food and fiber needed. Further, it is by the exchange of these products that farmers' wants are supplied. Agriculture is particularly vulnerable to the effects of drastic fluctuations in business activity and needs some form of insurance against such emergencies. Moreover, agriculture representing only a fifth of the total population and its business units of small size is in no position to hold its own by force against large commercial business units. There is need, however, that farmers develop a broader understanding of the interests of business groups and of consumers, for all three have much of common interest in the national picture.

Agriculture and Government. *Status of Activities in Operation.* In examining the unsolved questions as between agriculture and government it may be fitting to inquire how well the aids already provided are working. The notable records of accomplishments of the wide range of governmental agencies dealing with agriculture have been catalogued in considerable detail in Chaps. 2, 3, and 4, and need not be repeated here. Farmers' relations with government center largely in the U.S. Department of Agriculture. In the expansion of older agencies within the department and the creation of new ones overlapping of areas of activity and duplication of services have frequently occurred. Here, as in all other parts of the executive branch of the Federal government, reorganization is long overdue. As an illustration an article in a farm journal indicated that 178 men and women worked on a part-time or full-time basis on various Federal farm-service programs in one northern Illinois county in 1949.[16] Of these 123 lived in the county and 55 visited it regularly

[16] John Strohm, Big Government Is in Your County, Too. *Country Gentleman*, Vol. CXX, No. 3, March, 1950, p. 21.

in their duties. The direct cost to the Federal government for wages and expenses for work in this county was in excess of $86,000, divided in order of cost among the Production and Marketing Adminstration, veterans' training, soil conservation, teaching in high schools of agriculture and home economics, and agricultural and home economics extension work.

A remedy for duplication of effort throughout the U.S. Department of Agriculture has been proposed as a result of the study of the Agricultural Task Force of the Hoover Commission.[17] Under this plan the entire structure of the department would be reorganized and its functions grouped under the following services: staff, research, extension, agricultural resources conservation, commodity adjustment, regulatory, agricultural credit, and rural electrification. At what time and to what extent these proposals will be made operative is another unanswered question.

General Farm Programs. The outstanding questions involving the relations of agriculture and government arise in connection with the general farm programs. These programs have been the object of much praise and blame. Their origins, developments, and results have been traced. No one seriously questioned the need for governmental help to agriculture in the thirties when the situation was desperate because of low prices. Likewise, during the recent war governmental programs served to stimulate and direct agricultural production into those lines most needed for the war effort. Justification can be found also for providing some assistance in making the transition from the expanded war production to the needs for peacetime. The need for continuing subsidies in periods of high farm incomes, however, has been questioned. Public attention has been aroused to the vast quantities of surplus farm products accumulated by government purchase or under government loan. So great had become these holdings by mid-1950 that Congress had to authorize an additional 2 billion dollars of loan funds to supplement the 4.8 billion dollars of the Commodity Credit Corporation to permit it to carry through the commitments made for the year. Taxpayers are concerned with the cost of price-support practices and farmers with the effects of stored products on future prices.

Objectives. That some type of farm program will be retained appears obvious after nearly two decades of experience. How are we to judge the programs that have been or will be advanced? Some general criteria may be set forth by which farm programs may be constructively evaluated. Such criteria should be separated into two categories, those which apply to the objectives of the program and those which indicate the tech-

[17] H. P. Rusk, A Cure for "Big Government" Ills. *Country Gentleman*, Vol. CXX, No. 3, March, 1950, p. 192.

sidered. They are adequate, however, to indicate the complexity of the problem.

A sound program which meets the objectives outlined above and which steers a clear course through the maze of techniques represents the highest relationship between agriculture and government. In promoting the national interest it must contribute to the welfare of all groups both within and outside agriculture. Often economic considerations point in one direction and political considerations in another. A union of the two is necessary to secure action. Meanwhile farmers recognize the necessity of developing some kind of longer range adjustments; to do so they must sometimes surrender immediate advantages. The complexity of all these relationships explains why agriculture at the middle of the twentieth century stands at the crossroads uncertain which way to turn.

The longer economic outlook is hopeful. O. V. Wells has summed up the two sides of the situation.[18] On the one side are difficult problems of conversion and conservation within agriculture, the problem of maintaining maximum employment in the nation, and that of a declining foreign market. On the other side, population is still growing at a rapid rate, the American standard of living is still rising, farm efficiency is still increasing, and farmers are learning how to work together in farm programs. In terms of American agriculture all this adds up to "25 good years ahead."

Summary

The relationships of agriculture are complicated by its own diversity which creates different interests and needs and results in widely different effects. Agriculture and business groups not only have much of common interest but also are highly interdependent. Agriculture, composed of many small units, has difficulty in holding its own with the prevailing pattern of much larger business units. Labor through organization exerts a strong voice in the national picture, while consumers though numerically strong have no central channel of expression.

Groups which are unorganized or unable to hold their own in the economic struggle look to government to write the rules of fair play and to enforce them. Because of the demands made upon it government also becomes a participant in the activities of many groups.

Agriculture has long been the recipient of Federal aid in many ways. This situation arose in part because farmers are peculiarly vulnerable to many kinds of change beyond their control. But the patterns of aid once

[18] O. V. Wells, 25 Good Years Ahead. *Farm Journal*, Vol. LXXIV, No. 4, April, 1950, p. 29. Mr. Wells is Chief of the Bureau of Agricultural Economics, U.S. Department of Agriculture.

initiated tend to grow. The basic objectives of agriculture might well be applied to other groups and to the nation as a whole. Unfortunately, the means of achieving these objectives have fallen far short of the ideals. Conversion from war to peace conditions was difficult. The political effort to make this transition painless doubtless prolonged the adjustment and increased the confusion. Even before this adjustment was completed the situation was reversed and the nation was again faced with the unusual demands of a program of military preparedness. This program called for increased production by both agriculture and industry and further postponed a longer range solution of the agricultural problem. Discussion of the many proposals advanced should serve to clarify the issues and eventually to realize an increasing measure of stability in agriculture.

QUESTIONS

1. Is the welfare of agriculture fundamental to that of the country as often pictured? Why or why not?

2. Why do farmers not present a united front in their demands for assistance?

3. What interests are common to agriculture and business groups?

4. What interests are common to agriculture and organized labor? To farmers and consumers?

5. Wherein do conflicts arise between farmers and business groups? Between farmers and other groups?

6. To what extent should all groups look to government to redress their grievances?

7. In what ways has agriculture benefited from governmental activities?

8. In their demands for help farmers have sometimes been classed as materialistic. To what extent is this statement true?

9. Enumerate the general farm programs put into operation in the last three decades.

10. What was the outstanding feature of each?

11. To what extent do you agree with the objectives outlined for general farm programs?

12. List the alternative choices that require decisions in shaping the provisions of a general farm program.

13. What criticisms may be made of the farm program currently in operation?

14. By comparison wherein are other proposed farm programs superior?

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